

TRANSMITTAL FORM FOR FILING PATENT APPLICATION

Sheet 1 of 4

Attorney
Docket No.: KT-001AX

WEINGARTEN, SCHURGIN, GAGNEBIN & HAYES LLP
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Express Mail No: EL418425196US

Date: January 28, 2000
First Named Inventor or
Application Identifier: James D. Schlick

BOX PATENT APPLICATION
Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Transmitted herewith under 37 CFR § 1.53 for filing is the patent application of:

Inventors: James D. Schlick
Andrew D. Longman
Betsy L. Alvarez
Matt Hummel
Sandra Lee
Jad Santos
Phong Dinh
Rachel Cline

Rich Berner
Gloria Gery
Robert Yardumian
Katherine Nicole Bussard
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Justin Wilmsmeyer
Martin Vernon
Karl Hogquist

Joel Schwarzbart
Peter DePaula
Barbara Stoeber
Michael Smith
Christabel Nazareth
James Mullins
Thomas H. Irwin

Entitled: METHOD AND APPARATUS FOR PROBLEM SOLVING, DECISION MAKING AND STORING,
ANALYZING, AND RETRIEVING ENTERPRISEWIDE KNOWLEDGE AND CONCLUSIVE DATA

[X] This is a request for filing a [X] **continuation** [] **divisional** [] **continuation**
inpart application under \$1.53(b) of prior Application No. 09/347,238, filed July
2, 1999 entitled: METHOD AND APPARATUS FOR PROBLEM SOLVING, DECISION MAKING AND
STORING, ANALYZING, AND RETRIEVING ENTERPRISEWIDE KNOWLEDGE AND CONCLUSIVE DATA

Enclosed are:

[X] 43 pages of written description, claims and Abstract, inclusive[X] 127 sheets of [X] informal [] formal drawings of Figs. 1-137 (one set)

[X] Oath or Declaration

[] Newly executed (original or copy)

[] Copy from prior application (37 CFR 1.63(d)) (for continuation/divisional).

The entire disclosure of the prior application, from which a copy of the oath
or declaration is supplied, is considered as being part of the disclosure of
the accompanying application and is hereby incorporated by reference therein.

[X] To be filed later

[] Cover sheet and Assignment of the invention to:

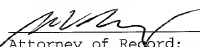
[] Certified copy of a _____ application (if foreign priority is
claimed) with letter claiming priority under Rule 55.

TRANSMITTAL FORM FOR FILING PATENT APPLICATION (CONTINUED)

Attorney Docket No.: KT-001AX

- [X] Information Disclosure Statement with 14 citations
- [X] Preliminary amendment is enclosed.
- [X] Return receipt postcard
- [X] Other: *Petition for Extension of Time Under Section 1.136 for parent case
Serial No. 09/347,238 (COPY)
Request for Deletion of Inventor Under MPEP § 201.03*
- [X] Verified statement of Small Entity was filed in prior application. Status still proper and desired
- [X] Priority is claimed under 35 USC § 120 as indicated on the attached sheet 4.
- [X] Priority is claimed under 35 USC § 119(a)-(d) as indicated on the attached sheet 4.
- [X] Priority is claimed under 35 USC § 119 (e) as indicated on the attached sheet 4.

[X] Christopher J. Lutz is hereby appointed Associate Attorney by:
Registration No.: 44,883



Attorney of Record: Gordon R. Moriarty
Registration No. 38,973

[X] **Power of Attorney** in the originally-filed application has been granted to one or more of the registered attorneys listed below. The attorneys listed below not previously granted power in the originally-filed application, as well as _____, are hereby given associate power:
Registration No.:

Stanley M. Schurgin, Reg. No. 20,979
Charles L. Gagnebin III, Reg. No. 25,467
Paul J. Hayes, Reg. No. 28,307
Victor B. Lebovici, Reg. No. 30,864

Eugene A. Feher, Reg. No. 33,171
Beverly E. Hjorth, Reg. No. 32,033
Holliday C. Heine, Reg. No. 34,346
Gordon R. Moriarty, Reg. No. 38,973

- [] Cancel in this application original claims _____ of the prior application before calculating the filing fee. (At least one original independent claim must be retained for filing purposes.)
- [] Add in this application claims _____ per amendment before calculating fee.

Attorney Docket No.: KT-001AX

TRANSMITTAL FOR FILING PATENT APPLICATION (CONTINUED)

CLAIMS FILED:	MINUS BASE:	EXTRA CLAIMS:	RATE:	BASIC FEE:
				\$690.00
Independent	3 - 3	= 0	x \$78.00 =	0.00
Total	3 - 20	= 0	x \$18.00 =	0.00
[] Multiple Dependent Claims (1st presentation)			+ \$260.00 =	0.00
SUBTOTAL FILING FEE				\$690.00
Small Entity filing, divide by 2. (Note: verified statement must be attached per \$1.9, \$1.27, \$1.28.)				\$345.00
TOTAL Filing Fee				\$345.00

[] The filing fee has been calculated above; a check in the amount of _____ is enclosed.

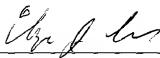
[X] The filing fee will be submitted at a later date.

[X] In the event a Petition for Extension of Time under 37 CFR \$1.17 is required by this paper and not otherwise provided, such Petition is hereby made and authorization is provided herewith to charge Deposit Account No. 23-0804 for the cost of such extension.

[] The Commissioner is hereby authorized to charge payment of any additional filing fees under 37 CFR \$1.16 associated with this communication or credit any overpayment to Deposit Account No. 23-0804.

Address all future communications to:

WEINGARTEN, SCHURGIN, GAGNEBIN & HAYES LLP
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 Attorney of Record: Christopher J. Lutz
 Registration No. 44,883

TRANSMITTAL FOR FILING PATENT APPLICATION (CONTINUED)

[X] Priority is claimed under 35 USC § 120 of prior Application(s)
No. 09/347,238, filed July 2, 1999, entitled: METHOD AND APPARATUS FOR PROBLEM SOLVING, DECISION MAKING AND STORING, ANALYZING, AND RETRIEVING ENTERPRISEWIDE KNOWLEDGE AND CONCLUSIVE DATA

[] The above-identified application(s) is/are assigned of record to:

[] Priority is claimed under 35 USC § 119 (a)-(d) of the following application(s).

<u> </u>	<u> </u>	<u> </u>
(Application Number)	(Country)	(Filing Date)

<u> </u>	<u> </u>	<u> </u>
(Application Number)	(Country)	(Filing Date)

<u> </u>	<u> </u>	<u> </u>
(Application Number)	(Country)	(Filing Date)

[] The above-identified application(s) is/are assigned of record to:

[X] Priority is claimed under 35 USC § 119 (e) of the following provisional application(s).

<u>60/091,476</u>	<u>July 2, 1998</u>
(Application Number)	(Filing Date)

<u>60/133,746</u>	<u>May 12, 1999</u>
(Application Number)	(Filing Date)

<u> </u>	<u> </u>
(Application Number)	(Filing Date)

[X] The above-identified provisional application no. 60/091,475 is assigned of record to: KEPNER-TREGOE, INC.

[X] The claim of small entity status in the above-identified provisional application(s) is made in this application and a copy of the small entity form(s) from the provisional application(s) is/are enclosed.

DGB/CJL/jds

SUBMIT IN TRIPLICATE

219144

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PPLICANT: JAMES D. SCHLICK ET AL. ATTORNEY
 DOCKET NO.: KT-001Xq800
 PPLICATION NO.: EXAMINER:
 ILED: JULY 2, 1998 GROUP NO.:
 ATENT NO.: ISSUED:
 NTITLED: ELECTRONIC TOOL

VERIFIED STATEMENT AS SMALL ENTITY

ssistant Commissioner for Patents
 ashington, D.C. 20231

ir:

THE UNDERSIGNED DECLARE(S):

xclusive rights in the above-identified invention reside in the "small entity(ies)" defined and
 amed below, and "small entity" fees are appropriate. Qualification as a small entity is based
 on the appropriately checked statements below:

☐ INDEPENDENT INVENTOR(S)

he below-signing independent inventor(s) has (have) not assigned, granted, conveyed or licensed,
 nd is (are) under no obligation under contract or law to assign, grant, convey or license any
 ights in the invention to any person who could not likewise be classified as an independent
 nventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would
 ot qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under
 7 CFR 1.9(e).

☒ SMALL BUSINESS CONCERN

he below-identified small business concern qualifies as a small business as defined in
 3 CFR 121.1301 through 121.1305, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced
 ees under Section 41(a) and (b) of Title 35, in that the number of employees, including those
 f its affiliates, which does not exceed 500 persons, and it has not assigned, granted, conveyed
 r licensed, and is under no obligation under contract or law to assign, grant, convey or
 icense, any rights in the invention to any person who could not be classified as an independent
 nventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would
 ot qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under
 7 CFR 1.9(e).

ncerns are affiliates of each other when, either directly or indirectly, one concern controls
 r has the power to control the other, or a third party controls or has the power to control
 th. The number of employees of the business concern is the average over the fiscal year of the
 rsons employed during each of the pay periods of the fiscal year. Employees are those persons
 mployed on a full-time, part-time or temporary basis during the previous fiscal year of the
 ncern.

Express Mail Number

EL418425196US

Attorney
Docket No.: KT-001Xq800

[] NONPROFIT ORGANIZATION (Check additional applicable box.)

The below-identified nonprofit organization qualifies as a small entity under 37 CFR 1.9(e) in that it constitutes:

1. [] a university or other institution of higher education located in any country; or
2. [] an organization of the type described in Section 501(c)(3) of the Internal Revenue Code of 1954 (26 USC 501(c)(3)) and exempt from taxation under Section 501(a) of the Internal Revenue Code (26 USC 501(a)); or
3. [] any nonprofit scientific or educational organization qualified under a nonprofit organization statute of a state of the United States (35 USC 201(i)); or
4. [] any nonprofit organization located in a foreign country which would qualify as a nonprofit organization under paragraphs (e)(2) or (3) of Rule 1.9 if it were located in the United States.

The undersigned acknowledge(s) the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate (37 CFR 1.28(b)).

The below-signing individual(s) hereby declare(s) that (he, she, they) are authorized to execute this statement on behalf of the small entity.

Name of Small Entity: (Independent Inventor/Small Business/Nonprofit)	
Kepner-Tregoe, Inc.	
Address of Small Entity: (Street, City, State or Country, Zip Code)	
17 Research Road, Princeton, New Jersey 08558	
Name of Person Signing: (Small Business/Nonprofit)	
Theodore F. Hiller, Jr., Esq.	
Title of Person Signing: (Small Business/Nonprofit)	
Secretary and General Counsel	
Signature: (Please sign and date in permanent ink.)	Date Signed:
X <i>Theodore F. Hiller, Jr.</i>	X <i>July 20, 1998</i>

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application : James D. Schlick, et al.
 Filed : Herewith
 For : METHOD AND APPARATUS FOR PROBLEM
 SOLVING, DECISION MAKING AND STORING,
 ANALYZING, AND RETRIEVING ENTERPRISEWIDE
 KNOWLEDGE AND CONCLUSIVE DATA
 Attorney's Docket : KT-001AX

Group Art Unit:

 I hereby certify that this correspondence is being deposited with
 the United States Postal Service as first class mail in an
 envelope addressed to: Box Patent Application, Assistant
 Commissioner for Patents, Washington, D.C. 20231 on

By _____
 Christopher J. Lutz
 Registration No. 44,883
 Attorney for Applicants

PRELIMINARY AMENDMENT

Box Patent Application
 Assistant Commissioner for Patents
 Washington, D.C. 20231

Sir:

Kindly enter the following Preliminary Amendment in the
 above-identified application, as follows.

In the Specification

Please amend the specification as follows.


At line 14, after "incorporated herein by reference.", please insert the following:

This application claims priority under 35 U.S.C. 120 to U.S. Application No. 09/347,238, filed July 2, 1999, entitled METHOD AND APPARATUS FOR PROBLEM SOLVING, DECISION MAKING AND STORING, ANALYZING, AND RETRIEVING ENTERPRISEWIDE KNOWLEDGE AND CONCLUSIVE DATA.

REMARKS

The Examiner is invited to telephone the undersigned attorney with any matters that may advance the prosecution of this application.

Respectfully submitted,
JAMES D. SCHLICK, ET AL.

By 
Christopher J. Lutz
Registration No. 44,883
Attorney for Applicants

WEINGARTEN, SCHURGIN,
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Boston, Massachusetts 02109

Telephone: (617) 542-2290
Telecopier: (617) 451-0313

Date: 1/28/00

GRM/jds
219202

TITLE OF THE INVENTION

Method and Apparatus for Problem Solving, Decision Making
5 and Storing, Analyzing, and Retrieving Enterprisewide
Knowledge and Conclusive Data

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims priority under 35 U.S.C.
10 §119(e) to U.S. Provisional Patent Application No.
60/091,476, filed July 2, 1998, entitled ELECTRONIC TOOL,
and U.S. Provisional Patent Application No. 60/133,746,
filed May 12, 1999, entitled ELECTRONIC TOOL, both
incorporated herein by reference.

15 STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR
DEVELOPMENT
Not Applicable

20 NOTICE REGARDING COPYRIGHTED MATERIAL PURSUANT TO
37 CFR § 1.71

A portion of the disclosure of this patent document
contains material which is subject to copyright protection.

The copyright owner has no objection to the reproduction
25 by anyone of the patent document or the patent disclosure,
as it appears in the Patent and Trademark Office file or
records, but otherwise reserves all copyright rights.

BACKGROUND OF THE INVENTION

30 Modern business enterprises must address issues
surrounding the business in a systematic, often time-
driven, manner. Such business enterprises typically have
an organizational structure, often of a hierarchical or
matrix form, to define the various groups of individuals
35 responsible for a particular area of the business. Often a
particular issue evokes different concerns from different
groups, resulting in differing definitions of a problem to
be addressed. Further, individuals within the groups may
not have the knowledge, or expertise, to effectively

Lines of communication can become blurred when individuals assume they share a common understanding of a problem. The notion of a problem surrounding a complex situation can have different meanings to different groups or individuals within the business enterprise. The term "problem" is often used indiscriminately to define factors such as a complex situation requiring action, a malfunction or error, the cause of a malfunction or error, a difficult choice, or future trouble. Each of these concerns requires different action, yet all elements may be common to a particular situation. Prior to implementing action, such a situation must be broken down into a manageable set of issues which require action, and which can be verified as the correct set of issues which will resolve the situation.

It would be beneficial to provide a computer software program adapted to provide an interactive interface to receive information surrounding such a complex situation, display such information in a format which allows the user to refine issues in a stepwise manner, and store such information, including both the solution or resolution and

the thought processes that created them, for subsequent query and retrieval by multiple users for addressing future such complex situations.

5

BRIEF SUMMARY OF THE INVENTION

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A computer software application, graphical user interface (GUI), and method for entering information concerning a complex business situation, refining such information in a stepwise manner through such an interface, generating a list of effective actions for addressing such a business situation, and storing such information in a knowledge base adapted for future query and reporting use for such complex business situations, is provided. A set or sequence of process screen structures allows entry of specific aspects of such a situation to generate such an action list. Such process screen sequences provide a systematic method to gather and organize information effectively in order to resolve a complex situation, and to store such information in a knowledge base for later query and retrieval for the same or similar situations, thereby preserving enterprisewide knowledge and expertise. An action tracker interface is also provided which provides task management and monitoring of the various actions determined by the process screen sequences. The user has the ability to access the process screens in a non-linear mode and can toggle between interview and worksheet modes described further below.

A situation appraisal process screen sequence provides a starting point in assessing a complex or ill-defined business situation. An interface for entering concerns presented by such a situation is presented to a user, and allows prioritization and categorization of such concerns. In this manner a user determines which concerns should be addressed first, and whether these concerns present a problem to be resolved, a decision to be made, or a potential problem which could result from a present plan or

decision. A list of actions to be undertaken by groups or individuals is defined through the action tracker interface to address the prioritized concerns, and includes an indication of which of the other process screen sequences should be undertaken: problem analysis, decision analysis, and/or potential problem/opportunity analysis.

A problem analysis process screen sequence provides an interface for entering information surrounding the problem in a selectively sequential, orderly manner, and for entering possible causes for the problem by drawing on the experience of the user and the knowledge base of past situations. Possible causes are then evaluated and eliminated in a prioritized manner to determine which possible cause explains the facts presented by the problem, and confirmed to be the true cause by verifying any questionable information pointing to the most probable cause. Actions and tasks needed to be undertaken to verify the most probable cause are assigned and monitored through the action tracker interface.

A decision analysis process screen sequence provides an interface to allow entry of a PURPOSE OF A DECISION based on specific lists of results sought, and entering alternatives which might satisfy each result. Alternatives are then considered with respect to each result. Various risks associated with each alternative are entered, and are ranked based on magnitude and probability. A decision choice is then determined by scrolling through and balancing the alternatives and risks. A decision analysis may be undertaken based on a situation appraisal, may be used to assess several possible causes resulting from a problem analysis, or may be undertaken independently. Actions needed to implement the decision are then entered and tracked using the action tracker interface.

A potential problem/opportunity analysis process screen sequence provides an interface to assess and determine actions to mitigate or eliminate future possible

problems and capitalize on opportunities which may arise during implementation of decisions and plans. This process screen sequence may be undertaken as indicated by a situation appraisal, may be used to evaluate a decision indicated by a decision analysis, or may be undertaken independently. Possible future problems or opportunities are identified and entered, and likely causes of each future problem are identified. Preventative actions which serve to reduce the likelihood of occurrence of each of the future problems are developed by scrolling through the likely causes, and contingent actions which may mitigate the result should the future problem occur despite the preventative action are also entered. Tasks required to implement the preventative actions and contingent actions are then entered and tracked using the action tracker interface.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

The invention as defined herein will be more fully understood by reference to the following drawings and detailed description of the drawings, of which:

Fig. 1 shows a top level functional block diagram;

Fig. 2 shows a system architecture block diagram;

Fig. 3 shows a flowchart of the situation appraisal process screen sequence;

Fig. 4 shows a flowchart of the problem analysis process screen sequence;

Fig. 5 shows a flowchart of the decision analysis process screen sequence;

Fig. 6 shows a flowchart of the potential problem analysis process screen sequence;

Fig. 7 shows the LIST THREATS AND OPPORTUNITIES screen of the Situation Appraisal screen sequence;

Fig. 8 shows the SEPARATE AND CLARIFY CONCERNS screen of the Situation Appraisal screen sequence;

Fig. 9 shows the CONSIDER SERIOUSNESS, URGENCY AND GROWTH screen of the Situation Appraisal screen sequence;

Fig. 10 shows the DETERMINE ANALYSIS NEEDED screen of the Situation Appraisal screen sequence;

5 Fig. 11 shows the DETERMINE HELP NEEDED screen of the Situation Appraisal screen sequence;

Fig. 12 shows the STATE THE PROBLEM screen of the Problem Analysis screen sequence;

10 Fig. 13 shows the SPECIFY THE PROBLEM screen of the Problem Analysis screen sequence;

Fig. 14 shows the USE DISTINCTIONS AND CHANGES screen of the Problem Analysis screen sequence;

Fig. 15 shows the STATE POSSIBLE CAUSES screen of the Problem Analysis screen sequence;

15 Fig. 16 shows the TEST POSSIBLE CAUSES AGAINST SPECIFICATION screen of the Problem Analysis screen sequence;

Fig. 17 shows the DETERMINE THE MOST PROBABLE CAUSE screen of the Problem Analysis screen sequence;

20 Fig. 18 shows the GATHER FACTS TO VERIFY THE TRUE CAUSE screen of the Problem Analysis screen sequence;

Fig. 19 shows the THINK BEYOND THE FIX screen of the Problem Analysis screen sequence;

25 Fig. 20 shows the STATE THE DECISION screen of the Decision Analysis screen sequence;

Fig. 21 shows the DEVELOP OBJECTIVES screen of the Decision Analysis screen sequence;

Fig. 22 shows the CLASSIFY OBJECTIVES INTO MUSTS AND WANTS screen of the Decision Analysis screen sequence;

30 Fig. 23 shows the WEIGHT THE WANTS screen of the Decision Analysis screen sequence;

Fig. 24 shows the GERNERATE ALTNERATIVES screen of the Decision Analysis screen sequence;

35 Fig. 25 shows the SCREEN ALTERNATIVES THROUGH THE MUSTS screen of the Decision Analysis screen sequence;

Fig. 26 shows the COMPARE ALTERNATIVES AGAINST THE WANTS screen of the Decision Analysis screen sequence;

Fig. 27 shows the IDENTIFY ADVERSE CONSEQUENCES screen of the Decision Analysis screen sequence;

5 Fig. 28 shows the MAKE THE BEST BALANCED CHOICE screen of the Decision Analysis screen sequence;

Fig. 29 shows the IMPLEMENT DECISION screen of the Decision Analysis screen sequence;

10 Fig. 30 shows the DEVELOP A PLAN screen of the Potential Problem Analysis screen sequence;

Fig. 31 shows the LIST POTENTIAL PROBLEMS screen of the Potential Problem Analysis screen sequence;

Fig. 32 shows the ASSESS THREATS screen of the Potential Problem Analysis screen sequence;

15 Fig. 33 shows the CONSIDER LIKELY CAUSES screen of the Potential Problem Analysis screen sequence;

Fig. 34 shows the TAKING PREVENTATIVE ACTION screen of the Potential Problem Analysis screen sequence;

20 Fig. 35 shows the TAKING CONTINGENT ACTION screen of the Potential Problem Analysis screen sequence;

Fig. 36 shows the MODIFY PLAN screen of the Potential Problem Analysis screen sequence;

Fig. 37 shows the ACTION TRACKER screen;

25 Fig. 38 shows the situation appraisal knowledge base ER diagram;

Fig. 39 shows the problem analysis knowledge base ER diagram;

Fig. 40 shows the decision analysis knowledge base ER diagram;

30 Fig. 41 shows the potential problem analysis knowledge base ER diagram;

Fig. 41a shows the potential opportunity analysis base ER diagram;

35 Fig. 42 shows the action tracker knowledge base ER diagram;

Fig. 43 shows the general process screen sequence class inheritance graph;

Figs. 44a-44c show the situation appraisal class inheritance graph;

5 Figs. 45a-45d show the problem analysis class inheritance graph;

Fig. 46 shows the decision analysis class inheritance graph;

Fig. 47 shows the potential problem analysis class inheritance graph;

Fig. 47a shows the potential opportunity analysis class inheritance graph;

Fig. 48 shows the action tracker class inheritance graph;

15 Fig. 49 shows the DEVELOP A PLAN screen of the Potential Opportunity Analysis screen sequence;

Fig. 50 shows the LIST POTENTIAL OPPORTUNITIES screen of the Potential Opportunity Analysis screen sequence;

20 Fig. 51 shows the ASSESS BENEFITS screen of the Potential Opportunity Analysis screen sequence;

Fig. 52 shows the CONSIDER LIKELY CAUSES screen of the Potential Opportunity Analysis screen sequence;

Fig. 53 shows the TAKING PROMOTING ACTION screen of the Potential Opportunity Analysis screen sequence;

25 Fig. 54 shows the TAKING CAPITALIZING ACTION screen of the Potential Opportunity Analysis screen sequence;

Fig. 55 shows the MODIFY PLAN screen of the Potential Opportunity Analysis screen sequence;

30 Fig. 56 shows a GUI screen indicative of the top-level menu as illustrated in Fig. 1;

Figs. 57-73 show an alternative embodiment of the GUI screens of the situation appraisal process screen sequence;

Figs. 74-84 show a first alternative embodiment of the GUI screens of the problem analysis process screen

35 sequence; and

Figs. 85-137 show a second alternative embodiment of the GUI screens of the problem analysis process screen sequence.

5 DETAILED DESCRIPTION OF THE INVENTION

10 The top level functional block diagram of the complex situation assessment process screen sequences 10 as defined herein is shown in Fig. 1. Situation appraisal 12 is typically most applicable to an initial assessment and enumeration of concerns surrounding a situation. This appraisal results in an indication of which of the process screen sequences, problem analysis 14, decision analysis 16, or potential problem/opportunity analysis 18, is most applicable to a particular concern. Each of the three analysis process screen sequences 14, 16, 18 may also be invoked independently irrespective of a corresponding situation analysis. Action tracker interface 20 is available from all process screen sequences, and may also be invoked independently.

20 Fig. 2 shows an architectural block diagram of the system in which the situation assessment process screen sequences are invoked. Software architecture 23 as included, for example, in workstation 22 includes the process components 24 which comprise the situation appraisal, problem analysis, decision analysis, and potential problem/opportunity analysis software which drive the process screen sequences. Action tracker component 26 comprises software driving the action tracker, accessible from any of the process screen sequences. Knowledge base access and retrieval of prior situation assessment activities are performed by report writer component 28, for broad queries and retrieval of large quantities of data, and keyword query or other searching component 30, for pinpointing specific entities and situations. Other support and administrative functions are provided by

licensing management component 32, system support component 34, and administrative component 36.

Workstation 22 is networked to remote users 38, for enterprisewide access at remote locations, and local
5 network server 40, for accessing the knowledge base 42 to store and retrieve prior situation assessment data. Archive database 44 and client database 46 are for backup functions and enterprise specific information, respectively.

10 The software as described above is executed on a device such as workstation 22. In this embodiment, workstation 22 is a 32 bit microprocessor-based system such as a PENTIUM® PC and executes on a WINDOWS® (94, 98, or NT) platform or other operating system as compiled.
15 bit users may utilize commercially available extensions for use on older PCs. 32M main memory is recommended, however execution may be possible with less memory with lower performance.

The process screen sequences defined further below are
20 point and click WINDOWS®-type graphical user interfaces common to many computer applications. Screens are scrolled through using common scroll arrow buttons, and pull-down menus may be used to jump between various screens in a particular screen sequence. A user may begin with any
25 process screen sequence, also through a pull-down menu, although it is expected that a situation appraisal will precede one or more of the other process screen sequences. Each process screen sequence is identified by a unique process identifier or file name for later retrieval and
30 knowledge base entry. Entry cells are either for free form entry of descriptive text, or pull-down menus to populate the field from among a list of finite choices. A user may elect either a worksheet mode or interview mode of operation. Worksheet mode is for the experienced user, and
35 allows unprompted entry of data into the relevant fields to expedite the assessment. Interview mode is a more

structured environment which prompts the user with specific questions to elicit the proper type of data from the user. While slightly more time consuming, this mode allows a novice to produce an accurate assessment until the user is comfortable with worksheet mode. Modes may be toggled at any time. Information input by the user during interview mode is incorporated into the corresponding worksheet and vice-versa. Each of the process screen sequences outlined above are organized into deliverables called Process Application Kits (PAKs), which can be independently provided. Further, each PAK can be customized to suit a particular business focus or group of users through the COM object architecture (per MICROSOFT® Component Object Model). Additional PAKs can be developed to access the knowledge base accumulated with the process screen sequences, for example to generate project specific reports or to generate periodic reports about critical items. Throughout the process screen sequences, process checkers running in the background screen and filter data which is input by the user, thereby ensuring that complete and correct data is provided by the user throughout each screen sequence. These process checkers analyze the user input at various input points, and detect items which are likely to require refinement or correction. Constructively phrased messages are provided to the user to assist in proper correction of data entry, or to confirm that the input data is correct, along with corresponding prompts for response. In one embodiment, three process checkers are implemented, however additional checkers could be implemented to suit particular types of errors as the user base requires. Further, process checker messages may be toggled off by experienced users who do not require such assistance. An INFORMATION MISSTATED process checker employs rule-based analysis of input to detect skipped steps, unsound data, or incomplete analysis. Such messages are typically displayed as the

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user attempts to advance to a next screen, after completing entry on the current screen, however could also be provided upon entry of a particularly suspect cell. A COMMON PITFALLS process checker flags areas where

5 imprecise data will result in later difficulty, as with critical data items. Such messages are displayed prior to user input as a reminder, and do not analyze data after entry. A SHARPENER process checker assists in entry of critical fields where further prompting assists in

10 refining the response. A series of questions is presented to the user to assist in editing the response entered in the cell. This process checker, therefore, guides the user through a series of successively narrower questions in order to pinpoint accurately the desired item of

15 information. All process checkers may be overridden by the user once confirming that the response entered is in fact correct.

Cells as presented by the process screen sequences defined herein may be populated via direct text entry from

20 the keyboard, or may be populated and/or supplemented by attaching an external file. These files are stored in the knowledge base and remain associated with the particular cell or record. Such files may be MICROSOFT® Word Documents, POWER POINT® files, jpegs, bitmaps, AUTOCAD®

25 files, or other external file appropriate to the particular cell.

Flowcharts for exemplary situation appraisal, problem analysis, decision analysis, and potential problem analysis process screen sequences are shown in Figs. 3-6. Each of

30 the steps in the flowcharts corresponds to a specific screen in the sequences described in further detail below. Specifically, Fig. 3 shows a situation appraisal flowchart 50; Fig. 4 shows a problem analysis flowchart 52; Fig. 5 shows a decision analysis flowchart 54, and Fig. 6 shows a

35 potential problem analysis flowchart 56.

Software architecture is based upon various third-party toolkits and development platforms consistent with modern industry development standards to facilitate modifications and extensions. Unified Modeling Language (UML) is employed to standardize the object-oriented architecture. COM objects are provided where appropriate, to facilitate integration and modification. Rational Rose Modeler for software design, ERWin® for database modeling, and Delphi Client/Server are used to facilitate future enhancements.

SITUATION APPRAISAL

The situation appraisal screen sequence 50 provides a user interface which allows a situation to be subdivided into a set of specific concerns so that a user may graphically organize and clarify issues to be resolved. Each situation is stored in an individual situation file for later retrieval and database indexing. A situation background and theme are also provided to set the general business context and to be used as a reference or refresher for later querying and retrieval.

Once the situation file is created, the threats and opportunities screen, shown in Fig. 7, is then used to enter broad issues relating to general concerns of the situation. Users enter descriptive text for each broad issue in concern cells 100, which scroll downward to accommodate all the broad issues entered. Once complete, the ADVANCE SEQUENCE arrow button 102 is used to progress to the separate and clarify concerns screen shown in Fig. 8. Users then consider the broad issues entered in the previous screen, and clarify and refine them into distinct concerns in refined concern cells 104, removing redundant items and consolidating overlapping issues. When the modified list describes distinct refined concerns, rather than broad issues, ADVANCE SEQUENCE arrow 102 is used to progress to the concern consideration screen.

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The concern consideration screen shown in Fig. 9 allows a user to enter specific information for each of the stored refined concerns 104 stemming from a particular situation, as listed on the separate and clarify concerns screen. This provides an interface to populate various cells addressing the seriousness 106, urgency 108, and growth 110, defined further below, of a particular situation, thereby allowing computation of a priority 112 for that concern. The CONCERN CONSIDERATION screen is used to refine details of each concern. Some of these cells are further subdivided into a specification, for descriptive text, and a relativity field, for ranking relative to other concerns.

The priority cell 112 is computed based on the relativity fields for seriousness, urgency, and growth, described further below, to provide an overall ranking of concerns. Alternatively, this cell may be overridden by the user through priority pull-down 112.

The SERIOUSNESS cell 106 is further divided into a specification cell 126 and a relativity cell 116. Users enter descriptive text in the specification cell 126 to describe the impact the concern in question will have with respect to human resources, safety, cost, customers, productivity, reputation, and other factor which affect the enterprise. The seriousness relativity cell 116 is for entering a discrete ranking of magnitude relative to the seriousness of other concerns. A ranking hierarchy such as high (H), medium (M), low (L), and need more data (NMD) can be entered here through a pull-down menu similar to the priority cell, and will be displayed as well as used in calculating priority.

The URGENCY cell 108 also has two components, a specification cell 128 and a relativity cell 118. The urgency specification cell 128 is for descriptive text directed to determining when resolution of this concern would become difficult, expensive, or impossible. The

urgency relativity cell 118 is for entering a discrete ranking of magnitude relative to the urgency of other concerns, similar to the priority cell pull-down.

The GROWTH cell also has specification and relativity components. Specification cell 130 is for descriptive text directed to determining the evidence that the seriousness of the concern will grow. The growth relativity cell 120 is for entering a discrete ranking relative to growth potential of other concerns, similar to the priority cell pull-down. High (H) indicates that the growth potential is increasing, medium (M) indicates that the growth potential is stable, and low (L) indicates that growth is decreasing. Need more data (NMD) may also be entered.

Once all concerns 104 relevant to the situation are entered, screen sequence button 102 is used to advance to the determine analysis needed screen in Fig. 10. For each concern entered, five clarifying cells are provided: PRIORITY, SERIOUSNESS, URGENCY, GROWTH, and PROCESS. Each concern cell entered on the previous screen is displayed, along with a PROCESS cell 140 for each concern. PROCESS cell also has specification 144 and a relativity components 142. Process relativity cell 142 is for entering the specific process sequences, described further below, that should be used to address each concern, and is selected by pull-down menu 146. A problem analysis sequence should be undertaken if the concern is directed to the cause of why a particular event or occurrence happened. A decision analysis sequence should be undertaken if the concern is directed to determining the course of action that should be pursued to address the concern. A potential problem analysis should be undertaken if the concern is directed to predicting future occurrences or events and possible remedial action to be taken. A further situation appraisal should be undertaken if the concern is too broad to be adequately addressed by the problem, decision, or potential problem analysis sequences.

After an analysis is selected for each concern, the DETERMINE HELP NEEDED screen (Fig. 11) is used to identify specific individuals or groups to execute the analysis determined in the previous screen and to identify the specific objective of the analysis. The DETERMINE HELP NEEDED screen has a PROCESS section 150, which echoes information from the DETERMINE ANALYSIS screen, and an ASSIGNMENT section 152, for specifying involvement of other people. The ASSIGNMENT section 152 is integrated with the action tracker, described further below, which provides scheduling for all screen sequences. ACTION cell 154 is used to enter descriptive text for the task and objective. This task is generally an "analysis" from the determine analysis screen, or other task for addressing a particular concern. WHO cell 156 is a pull-down menu of names for assignment to the analysis, and also allows for entry of new names. WHEN cell 158 indicates the completion date of the analysis. NOTES cell 160 is a descriptive text cell which can contain clarifying or specification information of the analysis, such as product, assembly line, or plant location. STATUS cell 162 is used to describe the current state of the task, and is a pull-down with the options not started, action assigned, cancelled, on hold, cause confirmed. Other status cell values may be entered. Sort pull-down 164 allows sorting by any of the ASSIGNMENT section cells. The result of this process screen sequence is that the user is provided with an indication of which of the analysis process screen sequences, problem, decision, or potential problem, are most applicable to the concern in question, as described further below.

PROBLEM ANALYSIS

The problem analysis screen sequence provides a user interface which allows a problem to be subdivided into a set of statements which describe various aspects of the problem and what they are and are not, creating a concise,

accurate problem specification. These statements are then assigned possible causes. The possible causes are then evaluated to determine the most probable cause and verify the most probable cause to determine of it is the true cause.

A problem background statement concerning the context is read from the situation appraisal file to which this problem analysis corresponds. This statement may be edited by the user or alternately, entered entirely by the user.

This problem background statement is then stored in an individual problem analysis file for later retrieval and database indexing.

Referring to Fig. 12, the STATE THE PROBLEM screen is used to enter a statement of normal operation in the SHOULD BE HAPPENING cell 200 to describe what the object of the problem should be doing when performing properly. ACTUALLY HAPPENING cell 202 is then used to enter a perceived problem, which is the current condition of the object that is believed to be, or have, the problem. User then selects the applicable cause known/unknown button. If the cause is known, button 211 is selected, and the user is prompted that a problem analysis is not appropriate and an alternate screen sequence, such as decision analysis, may be applied. If the cause is not known, button 210 is selected, and the object of the problem is then entered in OBJECT cell 206, such as "motor", "assembly line five", or "Boston office". The DEVIATION cell 208 is used to enter the deviation from normal operation, such as "cracked housing" or "sales down ten percent".

The user then advances to the SPECIFY THE PROBLEM screen, for example as shown in Fig. 13, to enter specific statements of fact concerning the problem. A concise problem statement 212 from the object 206 and deviation 208 cells is carried over from the previous screen, and is the concatenation of the object and deviation cells to form a statement such as "Boston office sales down ten percent."

Eleven descriptor question cells 214 are provided (not all shown due to scroll down display), however fewer or additional statement cells could also be used.

Collectively, these descriptor question cells are for

- 5 describing the problem in terms of four domains: what, where, when, and extent. The eleven descriptor question cells 214 are for entering information to address the following: problem object, problem deviation, geographical variance or location, location of the deviation on the
- 10 problem object, first problem (deviation) occurrence, most recent or subsequent problem (deviation) occurrence, problem cycle (during lifecycle history of object), number of problem objects (how many objects have/do not have the deviation), size of problem (magnitude of a single
- 15 deviation), number of problem deviations (how many deviations on each object), and problem trend (how it is/is not progressing). For each descriptor cell, two subfields are provided. In each subfield, for each of the eleven descriptors, the user enters descriptive text directed to
- 20 what the problem is 216 and is not 218. The IS descriptor subfield is for accurately refining and narrowing the object that has the deviation. The IS NOT descriptor subfield is for indicating which other closely related entities could have the deviation, but do not. By defining
- 25 both the IS and IS NOT subfields, the responses in these cells serve to establish clear boundaries around the problem. Additional descriptor question cells for a particular descriptor question may be added by clicking on insert button 220 if needed to accurately refine the
- 30 problem. For example, WHAT OBJECT descriptor 222 might further clarify specific product packaging that is and is not experiencing the deviation, and also might indicate which assembly lines are affected. Other comparative designators may be used in place of "is" and "is not".

- 35 Following entry of the IS/IS NOT descriptor cells, the user advances to one of two screens. The user may advance

to the USE DISTINCTIONS AND CHANGES screen shown in Fig. 14, which provides cells for entering distinctions between each of the IS/IS not descriptors entered previously. These distinction fields assist in entering possible causes (Fig. 15). Alternatively, if the user prefers using their own knowledge and experience, they may advance directly to the STATE POSSIBLE CAUSES screen.

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The USE DISTINCTION AND CHANGES screen (Fig. 14) presents the user with the previously entered problem statement 212 and descriptor question cells 214, and provides, for each descriptor question, DISTINCTION 224 and CHANGE 226 cells. These DISTINCTION and CHANGE cells are for entering descriptive text to identify the distinctive features concerning the "IS" data 216 relative to the "IS NOT" data 218, for each of the descriptor questions 214. The information in these cells assists in identifying possible causes in the subsequent state possible causes screen (Fig. 15). Users enter distinctive features for each is/is not pair in DISTINCTION cells 224. Multiple distinctive features may be entered by clicking insert button 228 to insert a DISTINCTION cell. Not all descriptor IS/IS NOT cells need be populated, however a distinction may not be entered unless the corresponding descriptor question cells are populated. Descriptor IS/IS NOT cells may be entered here as well.

For each DISTINCTION cell 224, descriptive text concerning changes are entered in CHANGE cells 226. Such changes may be those that have occurred in, on, around, or about each distinction, in order to identify possible causes. Other changes may also be used. As with DISTINCTIONS 224, multiple change cells may be entered for each distinction by clicking the INSERT CHANGE button 230.

The user next advances to the STATE POSSIBLE CAUSES screen shown in Fig. 15. This screen has two formats depending on whether the user has elected to enter distinctions and changes. Fig. 15 shows the STATE POSSIBLE

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eliminates the possible cause 236 from the list. Conditions may be limited to three options to facilitate later sorting and processing of the possible causes to determine the true cause or causes, described below. Such an eliminated possible cause, however, and the associated assumption, is nonetheless retained in the knowledge base for subsequent queries, described further below with respect to the knowledge base query engine. Multiple ASSUMPTIONS/NOTES cells 242 needed to explain a particular descriptor question may be entered through INSERT ASSUMPTION button 246.

Following the entry of conditional assumptions, positive cause notes, and elimination of a subset of the causes, the DETERMINE MOST PROBABLE cause screen is called (Fig. 17). At this point the list of possible causes has been narrowed due to elimination of the possible causes resulting in a "NO BECAUSE" condition test, above. This screen presents remaining assumptions entered on the TEST POSSIBLE CAUSES screen (Fig. 16) in an ASSUMPTION cell 242, alongside the corresponding POSSIBLE CAUSE cell 236. For a listed possible cause, probability pull-down 247 may be used to assign a probability cell 248 from among: MPC (most probable cause, high (consider next), medium (also verify) and low (consider later). The ASSUMPTION cells 242 and POSSIBLE CAUSE cells 236 are sorted according to the probability 248 and the condition (244, Fig. 16) for use in the next screen.

The GATHER FACTS TO VERIFY THE TRUE CAUSE screen (Fig. 18) is then presented. Low probability possible causes are not carried over onto this screen, however such causes and assumptions are nonetheless stored in the knowledge base for later query use. The remaining possible causes and their respective assumptions are displayed in their respective cells 236, 246. Individual possible causes are considered by the user in a scrolling format which allows the user to advance through scroll buttons 248 from most

probable to the "ALSO VERIFY" possible causes. For each possible cause 236 presented, ACTION TRACKER cells 250 are used to enter actions needed to resolve the possible cause 236 and the accompanying assumptions 246. ACTION cell 252 is for descriptive text indicative of the specific test, activity, or question to be undertaken in order to confirm or deny a particular possible cause and the assumptions associated therewith. WHO cell 254 is for indicating the person or group responsible for the action, and WHEN cell 256 is for a completion date. NOTES cell 258 allows entry of descriptive text concerning other aspects of the action.

ACTION TRACKER cells 250 are integrated with the action tracker, described further below, which is integrated with the other process screen sequences as defined herein. In this manner, a concise itemization of the actions required to address a particular possible cause can be entered, stored in the knowledge base, and later searched and retrieved through the query engine, in addition to being codified for tracking the present problem. The query engine, described further below, may also be invoked to search for similar possible causes in the knowledge base. Resolution of the action items should then focus and refine the remaining possible causes to determine the true cause.

Fig. 19 shows the THINK BEYOND THE FIX SCREEN for entering data to enumerate ramifications of the actions just entered. This information may be useful in the potential problem analysis process screen sequence, described further below.

DECISION ANALYSIS

A situation appraisal, as described above, may also indicate that a decision analysis is warranted. A decision analysis, as described further below, allows a user to populate cells specifying objective aspects of the decision, and use these cells for reporting and querying of

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weight. The most compelling objective is assigned a value of ten on a zero to ten scale, however the upper limit could be varied to suit the granularity desired as can the scale itself. The user then considers each remaining
5 objective and assigns a relative weight accordingly.

Following the WEIGHT THE WANTS screen, the user progresses to the generate alternatives screen shown in Fig. 24. This screen is for generating alternatives based on the previously entered objectives. MUST and WANT
10 objectives are displayed in MUST OBJECTIVES cell 322 and WANT OBJECTIVES cell 324. Want objectives may be sorted by relative weight cell 318 value, or may remain in the order entered. The user scrolls through the MUST and WANT objectives to generate alternatives, and enters these
15 alternatives in ALTERNATIVE cell 326. The user may scroll through the objectives in any order. However, considering the MUST objectives first ensures that mandatory items are reflected in the resulting alternatives list. Additionally, users may query the knowledge base for
20 previously entered alternatives using query engine, described further below. Additional alternatives may be entered by clicking INSERT ALTERNATIVES button 328. Objectives may also be added by clicking insert MUST OBJECTIVE button 330 and insert WANT OBJECTIVE button 332.
25 Once all alternatives are entered, the user advances to the screen alternatives through the musts screen, shown in Fig. 25, to refine and narrow the entered alternatives.

On screen alternatives through the MUSTS screen (Fig. 25), the MUST OBJECTIVES 322 and the ALTERNATIVES 326 are
30 displayed in a matrix form for review and selection. Scroll bars 336 and 334 can be used for horizontal scrolling through the alternatives and vertical scrolling through the must objectives, respectively. A FEASIBILITY cell 338 is therefore provided corresponding to each
35 alternative and must objective. Descriptive text to describe how an alternative does or does not meet a must

objective is entered by the user in descriptive portion 340. Each FEASIBILITY cell 338 also has a GO/NO GO toggle button 342 to provide a discrete indication of whether an alternative satisfies a particular must objective. An
5 alternative with even one "no go" attributed to it is deemed eliminated and is not carried forward. However, it will be retained in the knowledge base for later query and retrieval.

Following consideration of MUST objectives, the
10 COMPARE ALTERNATIVES AGAINST THE WANTS screen (Fig. 26) is entered. This screen is provides a WANT ALTERNATIVE slider 344 to rank alternatives, such as on a 1-10 scale, rather than a discrete GO/NO GO toggle. Previously entered want weight 318 is also displayed for reference. For each want
15 objective/alternative combination, a FEASIBILITY cell 340 is provided to describe the alternative with respect to the objective. Each WANT OBJECTIVE 304 is compared to ALTERNATIVES 326. The alternative which best satisfies the want objective receives a score 346 value of ten, or
20 highest, using slider 344. The other alternatives for that WANT OBJECTIVE 324 are scored relative to the alternative which received the score of ten.

Once the ALTERNATIVES 326 are scored, a weighted score for each objective 324 is computed and displayed. The
25 weighted score is the result of the weight value assigned the objective multiplied by the score value assigned to this alternative. The total weighted scores then indicate which alternatives best satisfy the objectives. Also provided is a total alternative score 348 for each
30 alternative, which serves as an indicator of the alternatives having a greater overall impact. A tentative choice button 350 is clicked to indicate which alternatives are selected by the user, which need not be the alternatives having the highest total alternative score
35 348.

Fig. 28 shows the MAKE THE BEST BALANCED CHOICE screen. This screen is used to select one alternative as a decision by displaying cells for the ADVERSE CONSEQUENCES 353 carried over from the previous screen, the total alternative score cell 348, and the want OBJECTIVES cell 324, entered previously. Mandatory "MUST" objectives have already been considered by eliminating the alternatives which do not satisfy them. Accordingly, the adverse consequence cells 353, WANT OBJECTIVE cells 324, and 35 ALTERNATIVES cells 326, may now be scrolled through to evaluate the elements of each available alternative 326.

Additional want objectives or adverse consequences may also be entered on this screen by clicking on INSERT WANT OBJECTIVE button 366 or INSERT ADVERSE CONSEQUENCE button 368, respectively. The chosen alternative is marked as a final decision by DECISION checkbox cell 370.

Following selection of final decision, the IMPLEMENT DECISION screen is displayed (Fig. 29). This screen displays the final decision 372 as chosen on the previous screen from the most appealing alternative 326, and further provides ACTION TRACKER cells for ACTION 376, WHO 378, WHEN 380, and NOTES 382. These cells provide input to the ACTION TRACKER, and are used similarly to the action tracker cells in the other screen sequences. Actions required to implement or complete the chosen decision are assigned to groups or individuals, scheduled, and tracked using the action tracker, described further below.

POTENTIAL PROBLEM ANALYSIS

Once a decision is made, the implementation of that decision may nonetheless encounter problems. The potential problem analysis screen sequence is used to enter and organize events and/or occurrences which may hinder the implementation of action plans. This screen sequence may be pursued following entry of ACTION TRACKER cells after a decision analysis or other process screen sequence, above, or may be undertaken alone with respect to an independent course of action.

Referring to Fig. 30, the DEVELOP A PLAN screen is shown. An action statement defining a specific and concise purpose of the action, task, or project is entered in ACTION STATEMENT cell 400. This statement may be carried over or modified from a decision analysis, or may be entered as free form text. A set of ACTION cells 402 is provided, which may be populated from an action tracker file or entered by the user. ACTION PLAN cell 404, NOTES cell 406, WHO cell 408, and WHEN cell 410 are used as in

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zero. TAKING CONTINGENT ACTION screen (Fig. 35) is used to enter actions which can minimize the effect if a particular potential problem nonetheless occurs. CONTINGENT ACTION cells 439 are used to enter such actions. Since such actions are only necessary if the potential problem occurs, TRIGGER cell 440 is used to specify the system, person, or event to invoke the particular contingent action. The information in TRIGGER cell 440 therefore contains information identifying the event that triggers and commences the contingent action to provide a rapid response to a particular potential problem. Additional CONTINGENT ACTION cells 439 and TRIGGER cells 440 may be added through the respective buttons 442, 444.

MODIFY PLAN screen (Fig. 36) is then used to review the action cells along with the preventative and contingent actions entered in this screen sequence. Upon finalization of the action plan, update ACTION TRACKER button 446 is used to store the information in the knowledge base where it is available to other process screen sequences as described further below with respect to the action tracker.

POTENTIAL OPPORTUNITY ANALYSIS

Once a decision is made, the implementation of that decision may provide additional opportunities. The potential opportunity analysis screen sequence is used to enter and organize events and/or occurrences which may offer opportunities in the implementation of action plans. This screen sequence may be pursued following entry of ACTION TRACKER cells following a decision analysis or other process screen sequence, above, or may be undertaken alone with respect to an independent course of action.

Referring to Fig. 49, the DEVELOP A PLAN screen is shown. An action statement defining a specific and concise purpose of the action, task, or project is entered in ACTION STATEMENT cell 900. This statement may be carried over or modified from a decision analysis, or may be

entered as free form text. A set of ACTION cells 902 is provided, which may be populated from an action tracker file or entered by the user. ACTION PLAN cell 904, NOTES cell 906, WHO cell 908, and WHEN cell 910 are used as in other process screen sequences to enter actions or tasks, clarifying notes, responsible groups or individuals, and due dates, respectively, and are described with the action tracker description below. Additional ACTION cells may be entered by clicking on INSERT ACTION button 912.

List potential opportunities screen (Fig. 50) is then used to view each ACTION cell 903 individually, and enter potential opportunities which could be raised by the specific action in POTENTIAL OPPORTUNITIES cell 916. The POTENTIAL OPPORTUNITIES cell allows entry of a concise statement to respond to important areas of the corresponding action. This sequence therefore allows entry of specific, concise potential opportunities corresponding to a particular action for later analysis. Scroll buttons 914 are used to advance through the ACTION cells 902 to review each action.

After the user has entered the potential opportunities for the actions, the ASSESS BENEFITS screen (Fig. 51) is used to identify potential opportunities which offer the greatest benefit, and those which are unlikely to have an opportunistic impact. The potential opportunities list entered on the previous screen therefore prioritizes the list to identify potential opportunities requiring attention first. ACTION STATEMENT cell 900 echoes the action statement. ACTION cell 903 lists the ACTION plan 904, NOTES 906, WHO 908, and when 910 cells individually, and may be scrolled using scroll buttons 914. For each ACTION cell 903, the potential opportunities associated with that action are listed in POTENTIAL OPPORTUNITY cells 916. For each potential opportunity, the user enters a PROBABILITY cell 918, and a SERIOUSNESS cell 920. PRIORITY cell 922 is computed based on the values of the benefit and

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5 action to serve as a barrier against the likely cause is entered in this cell 938. CAUSE PROBABILITY cell 930 from the previous screen may be used to assess higher benefit likely causes first, or to no longer consider a low probability likely cause.

10 Despite robust promoting actions, it is unlikely that the chance of a likely cause occurring can be increased to be a certainty. TAKING CAPITALIZING ACTION screen (Fig. 54) is used to enter actions which can maximize the effect if a particular potential opportunity occurs, whether caused by the promoting action or not. CAPITALIZING ACTION cells 939 are used to enter such actions. Since such actions are only necessary if the potential opportunity occurs, TRIGGER cell 940 is used to specify the system, 15 person, or event to invoke the particular capitalizing action. The information in TRIGGER cell 940 therefore provides an enumeration to provide a rapid response to a particular potential opportunity. Additional CAPITALIZING ACTION cells 939 and TRIGGER cells 940 may be added through 20 the respective buttons 942, 944.

25 When the capitalizing actions and triggers have been identified, it is often necessary to take preparatory actions that set the capitalizing actions and/or triggers in place before the potential opportunity might occur, and to remove the capitalizing actions and triggers after the potential opportunity could no longer occur.

30 MODIFY PLAN screen (Fig. 55) is then used to review the action cells along with the promoting and capitalizing actions entered in this screen sequence. Upon finalization of the action plan, update ACTION TRACKER button 946 is used to store the information in the knowledge base where it is available to other process screen sequences as described further below with respect to the action tracker.

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sequences applies to this concern: situation appraisal, problem analysis, decision analysis, or potential problem analysis. CONCERN SORT pull-down 514 allows the CONCERNS 502 from the action file to be sorted by various fields such as concern, process, or priority. VIEW BY pull-down 527 allows a user to view all concerns in the action file, or only those specific to a certain individual, such as all concerns to which the user is attributed an action.

Clicking on a CONCERN cell 502 displays all actions currently entered for that concern in the ACTION cells 516, for review and/or modification. Additional actions may be added to those uploaded from the action file. WHO cell 518 specifies the group or individuals responsible for executing the task specified in the action cell, and may be modified through a pull-down list of names and groups. Multiple names may be entered, and new names not in the pull-down may be added. WHEN cell 520 indicates the expected completion date of the action. STATUS cell 524 provides a discrete indication of milestones reached concerning the action, such as not started, in progress, late, action assigned, cancelled, on hold, cause confirmed. Additional status milestones may be added. NOTES cell 522 contains descriptive text concerning other information. ACTION SORT pull-down 526 allows the listed actions to be sorted by various fields such as ACTION, WHO, WHEN, NOTES, or STATUS. Actions may automatically be mailed electronically to others, including to recipients who are not users of the system. Alternative screen formats for the various GUI screens disclosed herein are listed in Figs. 56-137.

KNOWLEDGE BASE STRUCTURE

An entity-relationship (ER) diagram of the knowledge base accumulated through the various process screen sequences as defined herein is shown in Figs. 38-42. In addition, the knowledge base links process applications and

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tracks changes made on a user-by-user basis.

Situation appraisal ER diagram is shown in Fig. 38, and contains cells for storing the information entered in the cells during the situation appraisal process screen sequence. CONCERN 600, PRIORITY 602, and the PROCESS 604 to be used for further analysis are stored in refined CONCERN entity 606. ACTION TRACKER cells WHO 608, ACTION 610, and WHEN 612 are stored in INVOLVEMENT entity 614.

Fig. 39 shows the problem analysis ER diagram, and contains cells pertinent to the problem analysis process screen sequence. SHOULD BE HAPPENING 616, ACTUALLY HAPPENING 618, OBJECT 620, and DEVIATION 622 are stored in PROBLEM entity 624. IS/IS not cells are stored in RESPONSE entity 626. DISTINCTIONS 628 are stored in DISTINCTIONS entity 630. CHANGES 632 are stored in CHANGES entity 634. POSSIBLE CAUSES 636 are stored in PROBABLE CAUSES entity 638. CONDITIONS AND ASSUMPTIONS 640 are stored in TEST RESPONSES entity 642. CONFIRMED TRUE CAUSE 644 is stored in BEYOND FIX 646. ACTION TRACKER cells are stored in CAUSE ACTIONS entity 648.

Fig. 40 shows the decision analysis ER diagram. BACKGROUND 650 and STATEMENT 652 are stored in DECISION ENTITY 654. SCORES 656 for the various alternatives are stored in ALTERN 658.

Potential problem analysis ER diagram is shown in Fig. 41. POTENTIAL PROBLEM 660, SERIOUSNESS 664, and PROBABILITY 662 are stored in SPECIFICATION entity 666. LIKELY CAUSES 668 are stored in CAUSE entity 670. PREVENTATIVE ACTIONS 672 are stored in PREVENT ACTION entity 674. CONTINGENT ACTIONS 676 are stored in CONTINGENCY ACTION 678 entity, and corresponding TRIGGERS 680 are stored in TRIGGER entity 682.

Potential opportunity analysis ER diagram is shown in Fig. 41a, and is similar in structure to the potential problem analysis ER diagram shown in Fig. 41. Potential opportunity 660a, benefit 664a, and probability 662a are

stored in SPECIFICATION entity 666a. Likely causes 668a are stored in CAUSE entity 670a. PROMOTING ACTIONS 672a are stored in PROMOTE ACTION entity 674a. Capitalizing actions 676a are stored in CAPITALIZING ACTION 678a entity, and corresponding triggers 680a are stored in TRIGGER entity 682a.

Fig. 42 shows the action tracker ER diagram. CONCERNS 684, SERIOUSNESS 686, URGENCY, 688, GROWTH 690, and PRIORITY 692 are stored in CONCERNS entity 694. ACTIONS 696, WHO 698, WHEN 700, NOTES 704, and STATUS 702 are stored in ITEMS entity 706.

The knowledge base as described above is populated with cells entered in the corresponding process screen sequences. This knowledge base may be queried during current process screen sequences to draw upon knowledge obtained from prior process screen sequences. Such queries and reports are through a standard SQL interface, and may be broad report-based statistical information, or specific keyword queries to pinpoint a specific process screen sequence. Such keyword queries are facilitated by the use of a master keyword table. Prior to saving any of the process screen sequences as defined herein, process records are parsed for occurrences of new keywords. New keywords not previously entered are displayed to the user, who is prompted to enter, categorize, and create associations for the keywords in the master keyword table.

These queries and reports may be predetermined, to address periodic status items such as displaying all unresolved problem analysis, or to list all decisions concerning a particular product line, or may be individual point-and-click queries using the individual knowledge base fields. An integrated database engine such as ORACLE® provides initial support for the knowledge base, however other database engines using SQL or other query language could be employed in alternative implementations or to customize an application to a particular user.

The class inheritance graphs of the complex situation assessment application as defined herein are shown in Figs. 43-48. Where applicable, connection links (A)-(N) are shown with the respective circled capital letters to indicate multiple sheet graphs.

The general process screen sequence class inheritance graph 800 is shown in Fig. 43. This graph defines the general process class common to the process screen sequences defined above. Situation appraisal inheritance graph is shown on Figs. 44a-44c. Situation class 802 is derived from the general process class, and manipulates situation background and general information. Concerns are manipulated by initial CONCERNS class 804 and REFINED CONCERNS class 806. Analysis needed is manipulated by SPECIFICATION class 808.

Referring to Figs. 45a-45d, the problem analysis inheritance graph is shown. PROBLEM ANALYSIS analysis class 810 is derived from the general PROCESS class 800 (Fig. 43). INITIATING DATA class 812 manipulates the problem object and the problem deviation. Test against SPECIFICATION class 814 manipulates is/is not information. POSSIBLE CAUSE class 816 manipulates possible causes. Changes and distinctions are handled by DISTINCTION/CHANGES pairs class 818.

Decision analysis process screen sequence class inheritance graph is shown in Fig. 46. DECISION ANALYSIS class 824 is derived from the general process class (800, Fig. 43). Objectives are manipulated by DECISION ANALYSIS OBJECTIVES class 818. Alternatives are handled by DECISION ANALYSIS ALTERNATIVES class 820. Adverse consequences are manipulated by DECISION ALTERNATIVES RISK class 822.

Fig. 47 shows the class inheritance graph for the potential problem analysis screen sequence. POTENTIAL PROBLEM ANALYSIS class 826 is derived from the general

PROCESS class 800, and also handles the action statement. Action description, probability, and seriousness are handled by POTENTIAL PROBLEM ANALYSIS SPECIFICATION class 828. Likely causes and preventative actions are handled by
5 the LIKELY CAUSES AND PREVENTATIVE ACTION classes 830 and 832, respectively. Contingent actions and the associated triggers are handled by CONTINGENCY ACTION and ACTION TRIGGER classes 834 and 836, respectively.

Fig. 47a shows the class inheritance graph for the
10 potential opportunity analysis screen sequence. POTENTIAL OPPORTUNITY ANALYSIS class 826a is derived from the general PROCESS class 800a, and also handles the action statement. Action description, probability, and benefit are handled by POTENTIAL OPPORTUNITY ANALYSIS SPECIFICATION class 828a.
15 Likely causes and promoting actions are handled by the LIKELY CAUSES AND PROMOTING ACTION classes 830a and 832a, respectively. Capitalizing actions and the associated triggers are handled by CAPITALIZING ACTION and ACTION TRIGGER classes 834a and 836a, respectively.

20 Action tracker inheritance graph is shown on Fig. 48. ACTION TRACKER CONCERNS class 838 manipulates concerns and the related ranking cells of seriousness, urgency, growth, and priority as defined above. Action descriptions and associated logistic scheduling data is manipulated by
25 ACTION TRACKER ITEMS class 840.

As various extensions and modifications to the present invention, including alternate embodiments of screen layout, sequence, and input methods may be apparent to those skilled in the art, the present invention is not
30 intended to be limited except by the following claims.

CLAIMS

1. A method of gathering, processing, storing, and displaying information concerning a complex business situation comprising the steps of:

providing a graphical user interface for entering data concerning said complex business situation;

refining said data in a predetermined, stepwise manner through user interaction with said graphical user interface;

generating, through said stepwise manner and said graphical user interface, a list of effective actions for addressing said complex business situation; and

storing said data in an indexed and normalized form in a knowledge base adapted for structured query and retrieval in performing said steps of refining and generating.

2. A computer program product comprising computer readable program code fixed on a computer readable medium operable to receive, process, store, and display information concerning a complex business situation comprising:

computer readable program code for providing a graphical user interface for entering data concerning said complex business situation;

computer readable program code for refining said data in a predetermined, stepwise manner through user interaction with said graphical user interface;

computer readable program code for generating a list of effective actions for addressing said complex business situation through use of said computer readable program code for refining said data; and

computer readable program code for storing said data in an indexed and normalized form in a knowledge base adapted for structured query and retrieval by said

computer readable program code for refining said data and said computer readable program code for generating said list.

- 5 3. An apparatus for gathering, processing, storing, and displaying information concerning a complex business situation comprising:

a graphical display device operable to provide a graphical user interface for entering data concerning said
10 complex business situation;

a digital input device for entering said data;

a first memory for storing said data for indexed retrieval;

a processor for refining said data stored in said
15 first memory in a predetermined, stepwise manner through user interaction with said graphical user interface and said digital input device;

a second memory having a set of instructions operable by said processor to generate, through said stepwise
20 manner and said graphical user interface, a list of effective actions for addressing said complex business situation; and

a third memory operable to store said entered data and said refined data in an indexed and normalized form in
25 a knowledge base adapted for structured query and retrieval.

ABSTRACT OF THE DISCLOSURE

000020.0320400

A computer software application, graphical user interface, and method for entering information concerning a complex business situation, refining such information in a stepwise manner through the interface, generating a list of effective actions for addressing such a business situation, and storing such information in a knowledge base adapted for future query and reporting use of such a complex business situations, is provided. A set of screen sequences allows entry of specific aspects of such a situation to generate an action list. A situation appraisal sequence allows entry of concerns stemming from the situation to prioritize such concerns. A problem analysis sequence allows entry of causes of a problem, and refining the causes to determine a true cause. A decision analysis sequence allows entry of alternatives concerning a decision, and refines such alternatives to determine one which suits the objective. A potential problem analysis sequence allows entry of potential problems which might occur, and refines causes and actions which mitigate or eliminate such potential problems. Such sequences provide a systematic method to gather and organize information effectively in order to resolve a complex situation, and to store such information in a knowledge base for later query and retrieval for the same or similar situations, to preserve enterprisewide knowledge and expertise.

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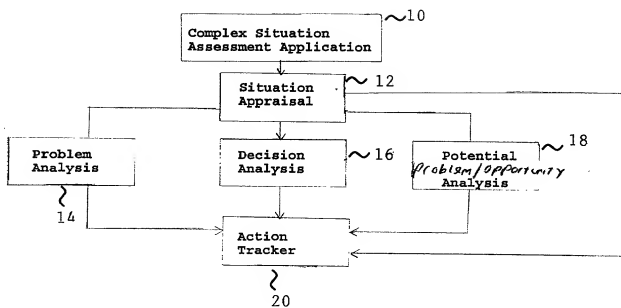


Fig. 1

008210-28426400

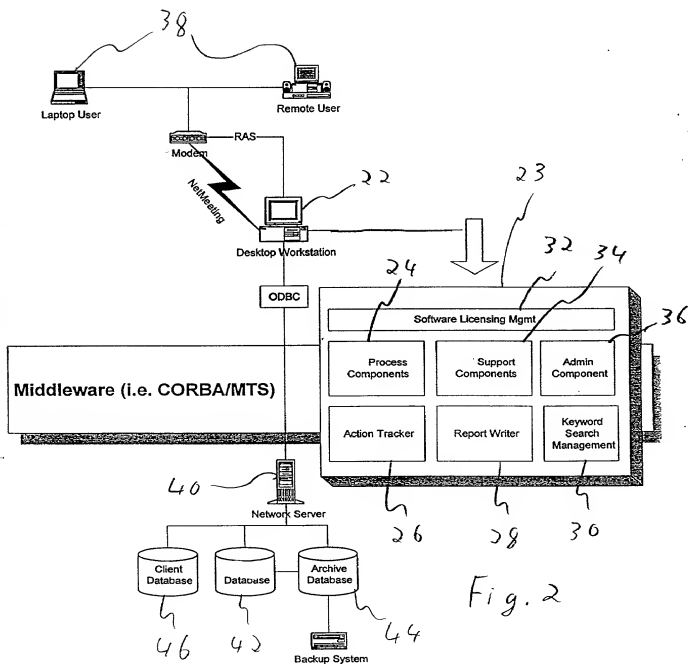
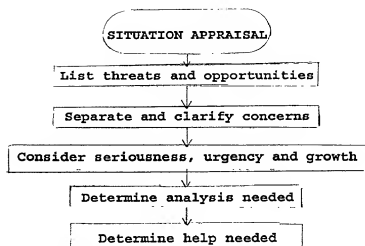


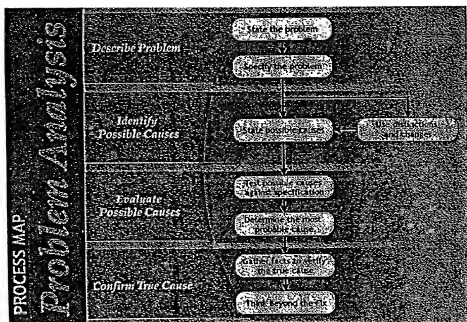
Fig. 2

00493783-012800



50

Fig. 3



52

Fig. 4

008210-8826460

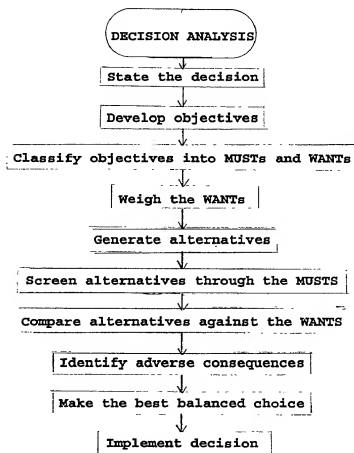


Fig. 5

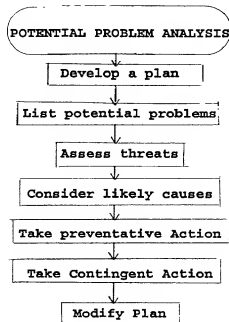
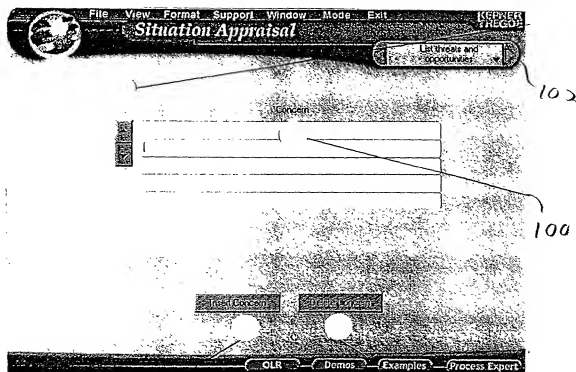


Fig. 6

000210-88/20060

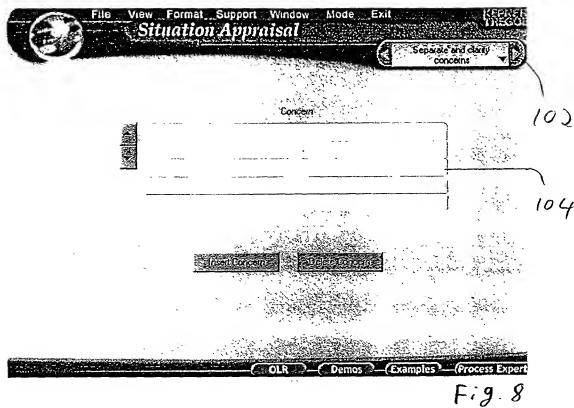
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56



f.g. 7

09493783-012800



09403783-012800

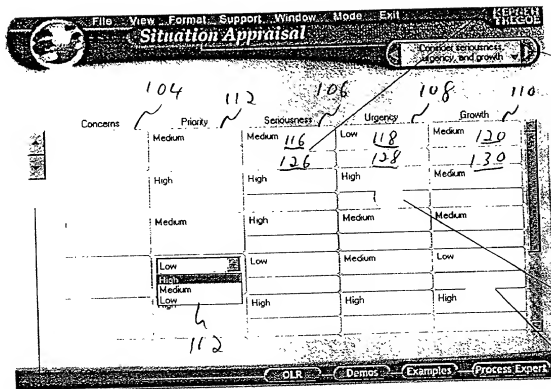


Fig. 9

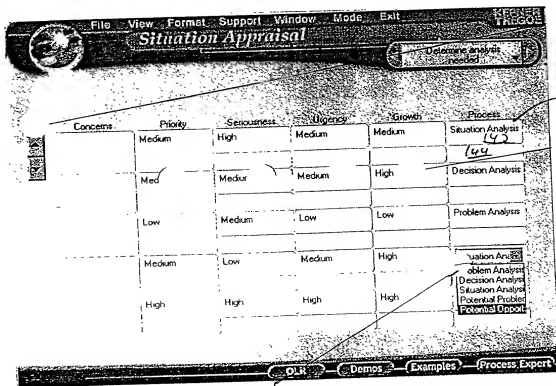


Fig 10

008270-2826960

File View Format Support Window Made Exit

Situation Appraisal

Decision help needed

Concerns	Priority	Seriousness	Urgency	Growth	Process
	Medium	High	Medium	Medium	Problem Analysis
	Medium	Medium	Medium	High	Decision Analysis
	Low	Medium	Low	Low	Problem Analysis

154 Action

156 Who

158 When

160 Notes

162 Status

152

OLR Demos Examples Process Expert

Fig. 11

000270-28/26460

File View Format Support Window Mode Exit

Problem Analysis

What should be happening?

What is actually happening?

Is the cause known?

What tells you the cause is unknown?

What is the Object?

What is the Deviation?

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OLR Demos Examples Process Expert

206

208

F.g. 12

File View Format Support Window Mode Exit

Problem Analysis

Problem: Object Deviation

What object?

What deviation?

Where geographically?

Where on the object?

When first?

When since?

When in the ...le?

How many objects?

What is the size?

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OLR Demos Examples Process Expert

216

220

218

F.g. 13

008210-0820960

File View Format Support Window Mode Exit

Problem Analysis

Object: _____ Deviation: _____

Problem: _____

What object?

	Object	Deviation	Distinction	Change
What deviation?				
Where geographically?				
Where on the object?				
When first?				
When since?				
When in the life cycle?				

What object? What deviation? Where geographically? Where on the object? When first? When since? When in the life cycle?

Distinction Change

OLR Demos Examples Process Expert

Fig. 14

214 212 230 228 216 218 224 226

File View Format Support Window Mode Exit

Problem Analysis

Object: _____ Deviation: _____

Problem: _____

What object?

	Object	Deviation	Distinction	Change
What deviation?				
Where geographically?				
Where on the object?				
When first?				
When since?				
When in the life cycle?				

What object? What deviation? Where geographically? Where on the object? When first? When since? When in the life cycle?

Distinction Change

OLR Demos Examples Process Expert

Fig. 15

232 234

00493783.012800

File View Format Support Window Mode Exit

Problem Analysis

Problem: Object Deviation

What object? Is Is Not Condition only if

What deviation? yes because

Where geographically? only if

Where on the object? yes because

When first? no because

Assumptions/Notes

OLR Demos Examples Process Export

Fig. 16

File View Format Support Window Mode Exit

Problem Analysis

Problem: Object Deviation

Probably MPC

Postable Causes

Assumptions

None

No assumptions necessary

No assumptions necessary

OLR Demos Examples Process Export

Fig. 17

00403783-01800

File View Format Support Window Mode Exit

Problem Analysis

Problem: Object _____ Deviation: _____

Possible Cause: *Assumed Cause*

236

258

252

254

246

248

256

250

Notes: _____ Action: _____ Who: _____ When: _____

OLR Demos Examples Process Expert

Fig. 18

File View Format Support Window Mode Exit

Problem Analysis

Problem: Object _____ Deviation: _____

Confirmed True Cause: _____

What other damage could this cause: _____

Previous Deviation: _____ New Deviation: _____

Notes: _____ Action: _____ Who: _____ When: _____

260

OLR Demos Examples Process Expert

Fig. 19

00493783-018800

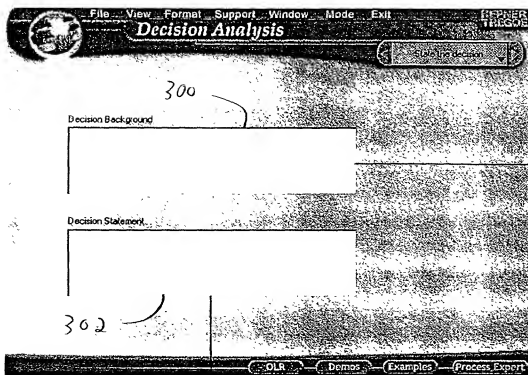


Fig. 20

008270-6826060

File View Format Support Window Mode Exit

Decision Analysis

Develop objectives

Decision Statement

Objective

Notes

Insert Objective

OLR Demos Examples Process Expert

308

Fig. 21

File View Format Support Window Mode Exit

Decision Analysis

Develop objectives to MUST or WANT

Decision Statement

Objective

Notes

Insert Objective

WANT
MUST
WANT
MUST
MUST
WANT
MUST

OLR Demos Examples Process Expert

308

Fig. 22

00493783.012800

File View Format Support Window Mode Exit

Decision Analysis

KIPPER TREKOR

Decision Statement

WANT Objectives Weight Notes

5

8

0

316

304

314

320

318

306

OLR Demos Examples Process Expert

Fig. 23

File View Format Support Window Mode Exit

Decision Analysis

KIPPER TREKOR

Decision Statement

Alternative Objective Notes

5

326

322

330

324

332

328

OLR Demos Examples Process Expert

Fig. 24

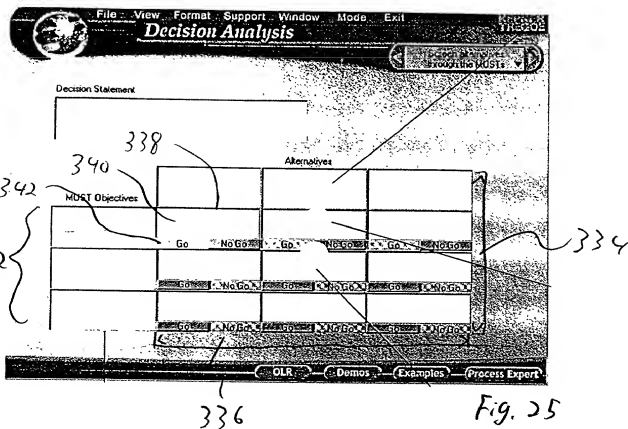


Fig. 25

008210.2826n60

File View Format Support Window Mode Exit

Decision Analysis

Decision Statement

WANT Objectives

5	340	2	346	0	6
8	344	6		0	6
3		6		0	4

TOTAL - Tentative Choice ☐ 76 ☐ 0 ☒ 90

OLR Demos Examples Process Expert

350

348

Fig. 26

File View Format Support Window Mode Exit

Decision Analysis

Decision Statement

Alternative

76

II

Probability	Then	Otherwise	Notes
MEDIUM		MEDIUM	
LOW			
MEDIUM			
HIGH			

OLR Demos Examples Process Expert

356

358

360

Fig. 27

000270-0828060

File View Format Support Window Mode Exit

Decision Analysis

370

Decision Statement

Decision Alternatives

Score

190

PREVIOUS

NEW

326

Weight Objectives

Weight

5

Notes

366

324

353

368

OLR Demos Examples Process Expert

Fig. 28

File View Format Support Window Mode Exit

Decision Analysis

Implement decision

Decision Statement

Final Decision

Notes

Action

Who

When

372

374

382

376

378

380

OLR Demos Examples Process Expert

Fig. 29

File View Format Support Window Mode Exit

Potential Problem Analysis

Develop a Plan 400

Action Statement

Action Plan

Action Notes Who When

402

404 406 408

Insert Action 410 412

DLR Demos Examples Process Expert

F.g. 30

File View Format Support Window Mode Exit

Potential Problem Analysis

List Potential Problems 400

Action Statement

Action Plan

Action Notes Who When

403

414

Potential Problems 416

Insert Problem

DLR Demos Examples Process Expert

F.g. 31

File View Format Support Window Mode Exit

Potential Problem Analysis

Consider Threats

Action Statement

403	404 Action	406 Action Plan Notes	408 Who	410 When
414	422 Priority	416 Potential Problem	418 Probability	420 Significance
	High, Medium, Low	High, Medium, Low	High, Medium, Low	High, Medium, Low
	High, Med., Low	High, Medium, Low	High, Medium, Low	High, Medium, Low
	High, Medium, Low	High, Medium, Low	High, Medium, Low	High, Medium, Low

Sort Problem

OLR Demos Examples Process Expert

Fig. 32

File View Format Support Window Mode Exit

Potential Problem Analysis

Consider Likely Causes

Action Statement

403	404 Action	406 Action Plan Notes	408 Who	410 When
414	422 Priority	406 Likely Cause Potential Problem	418 Probability	420 Significance
	High, Medium, Low	High, Medium, Low	High, Medium, Low	High, Medium, Low
	High, Medium, Low	High, Medium, Low	High, Medium, Low	High, Medium, Low
	High, Medium, Low	High, Medium, Low	High, Medium, Low	High, Medium, Low

Sort Problem

OLR Demos Examples Process Expert

436

Fig. 33

008210-887806760

File View Format Support Window Mode Exit

Potential Problem Analysis

Taking Preventative Action

Action Statement

Action Plan

Action	Notes	Who	When

Preventative Actions

Priority	Potential Problem	Likely Cause	Preventative Action

Insert Likely Cause

Insert Preventative Action

OLR Demos Examples Process Expert

Fig. 34

File View Format Support Window Mode Exit

Potential Problem Analysis

Taking Contingent Action

Action Statement

Action Plan

Action	Notes	Who	When

Contingent Actions

Priority	Potential Problem	Contingent Action	Trigger

Insert Contingent Action

Insert Trigger

OLR Demos Examples Process Expert

439 442 440 444 Fig. 35

00493793.012900

File View Format Support Window Mode Exit

Potential Problem Analysis

Modify Plan

Action Statement

Action Plan

Action Notes Who When

Insert Actions Update Action track

OLR Demos Examples Process Expert

446

Fig. 36

09493783.01800

514

KTActionTracker

File View Format Support Window Mode

Sort By: Concern

500

504

Action Files	Priority	Concern	Seriousness	Urgency	Growth	Process
My Actions		Confirm true cause				
Rockwell PA		PA on dropping revenues	508	510		
Department SA						
Tamworth PA						

506

512

527

526

520

Sort By: Who

524

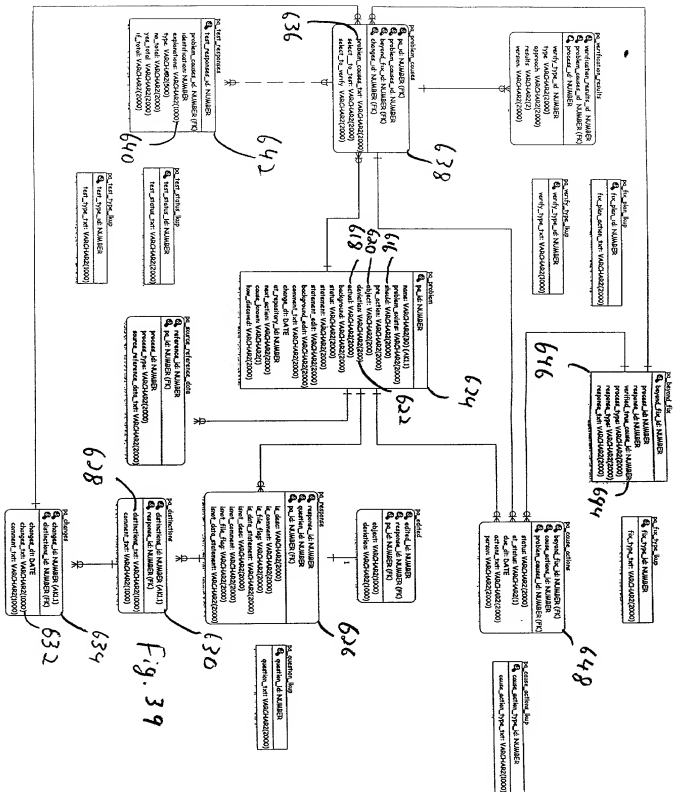
516

Action	Who	When	Notes	Status
Perform chemical analysis on cleaning fluid		4.26-98	Fluid product #144458 b	
Check paint on new life vests		4.25-98		

Fig. 37

008210-2826160





09493783.012800

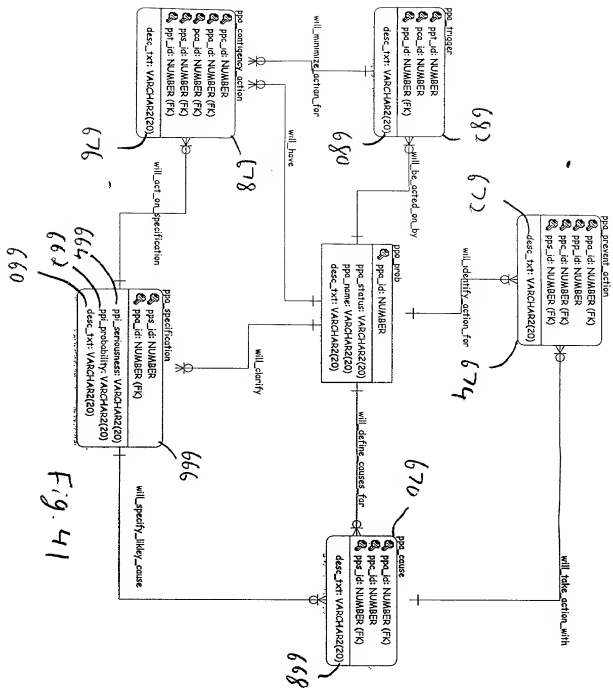
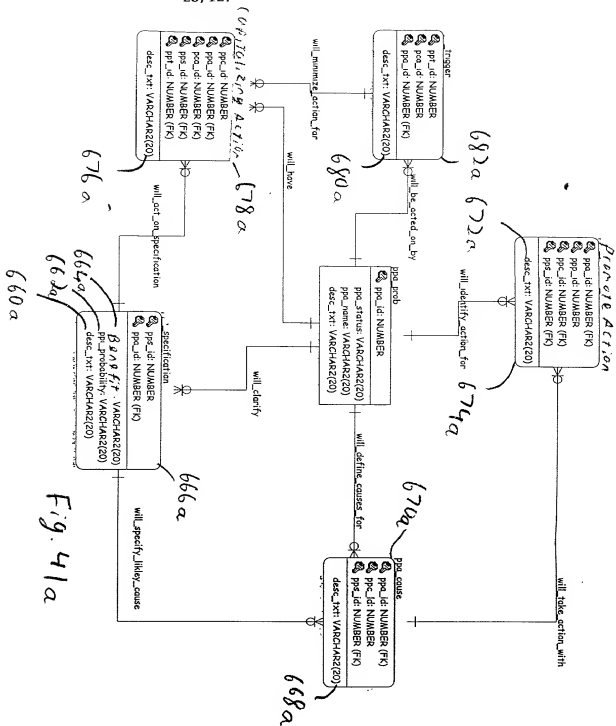


Fig. 41



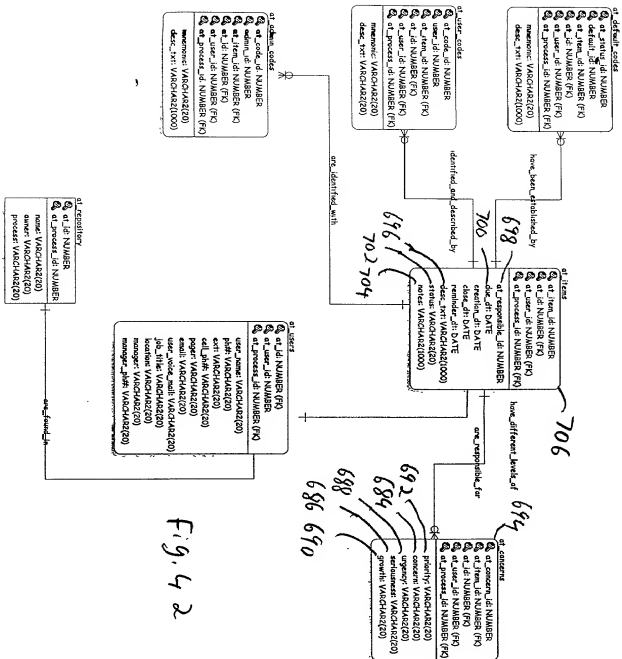
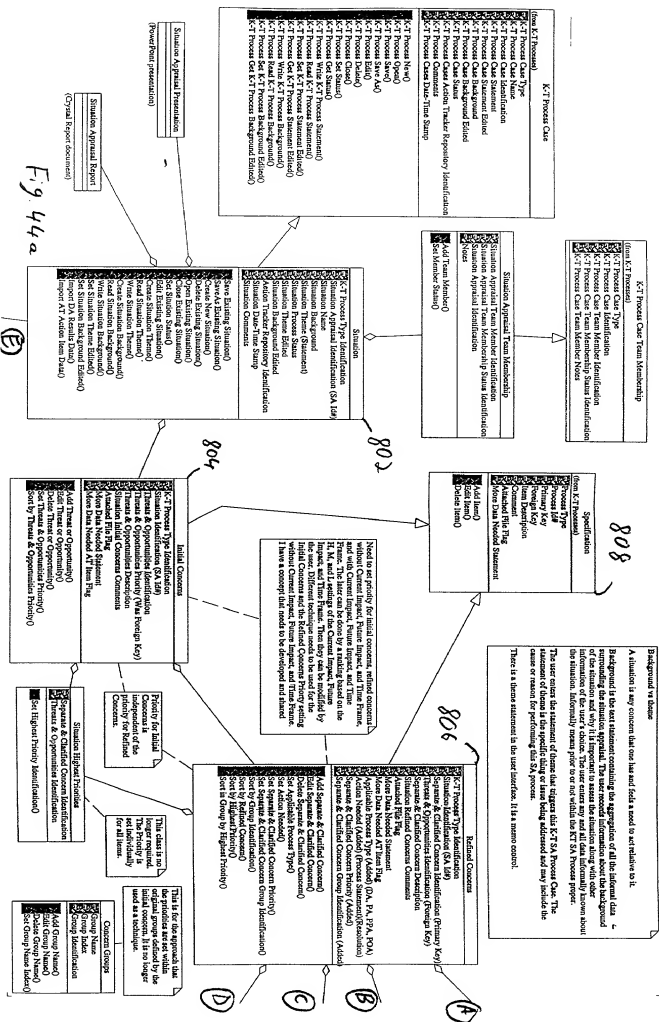


Fig. 42



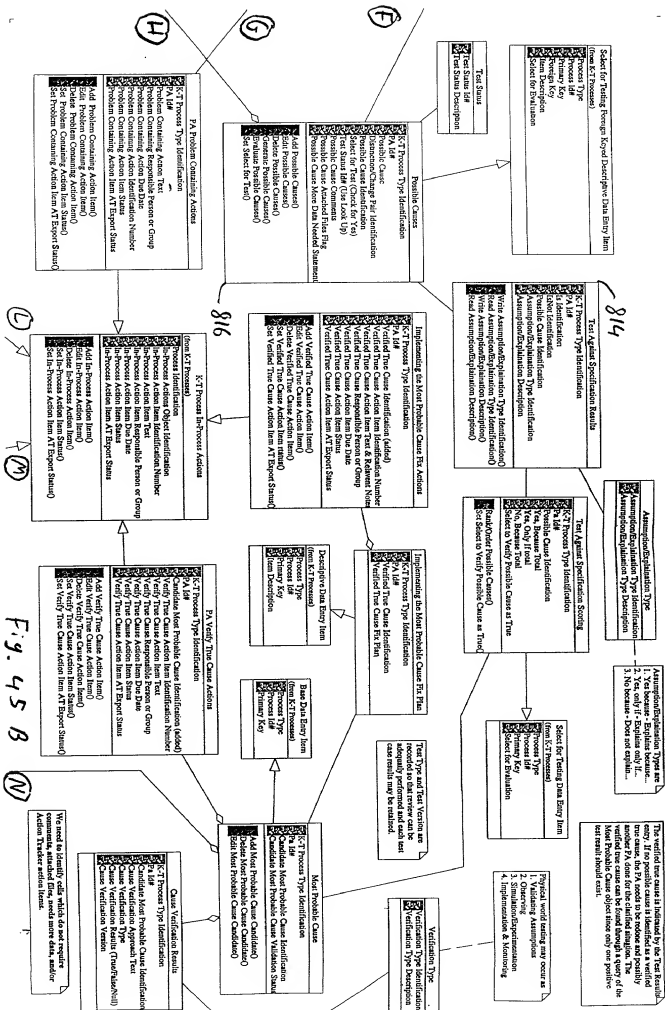




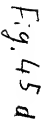
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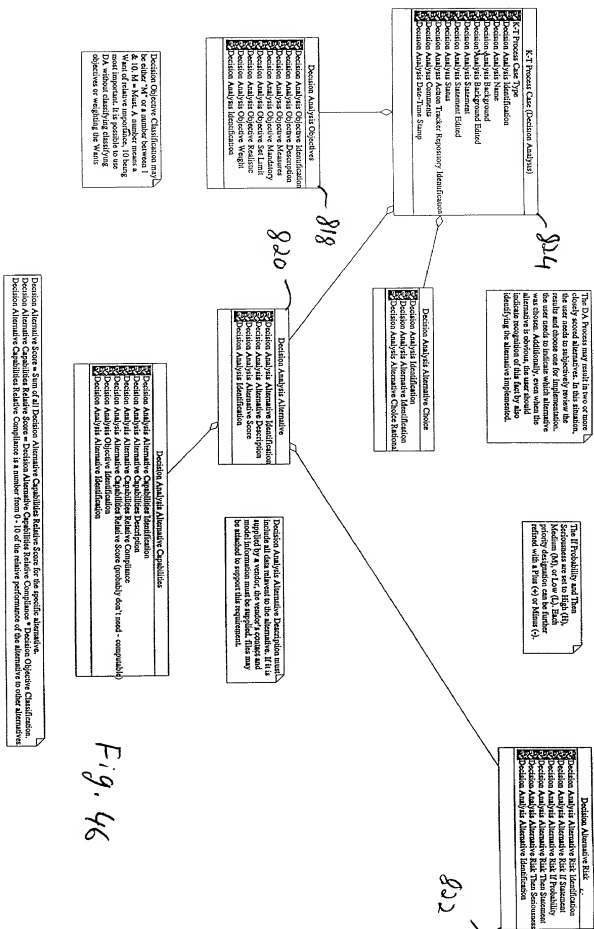
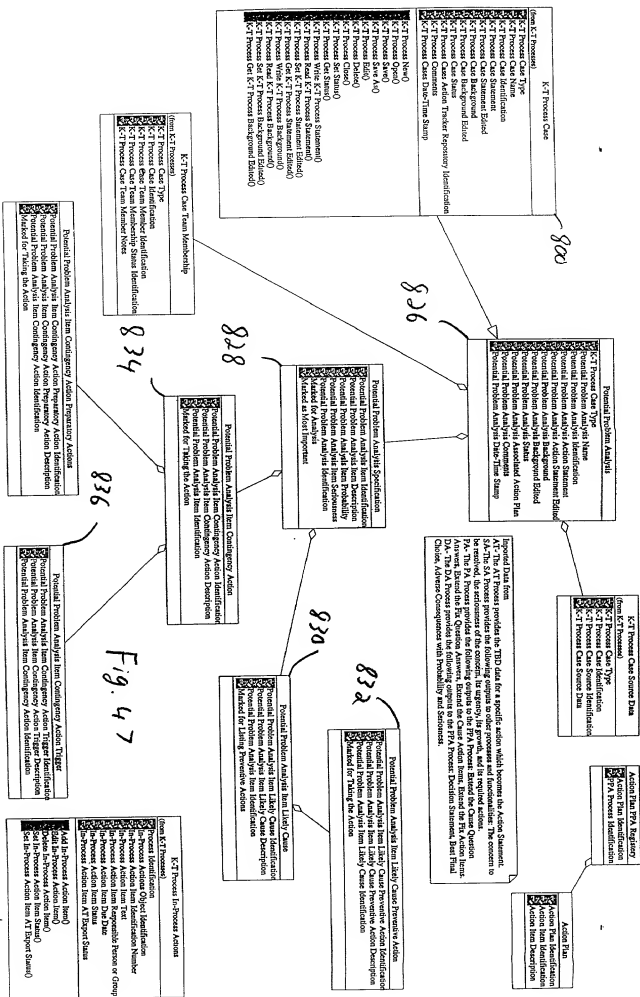
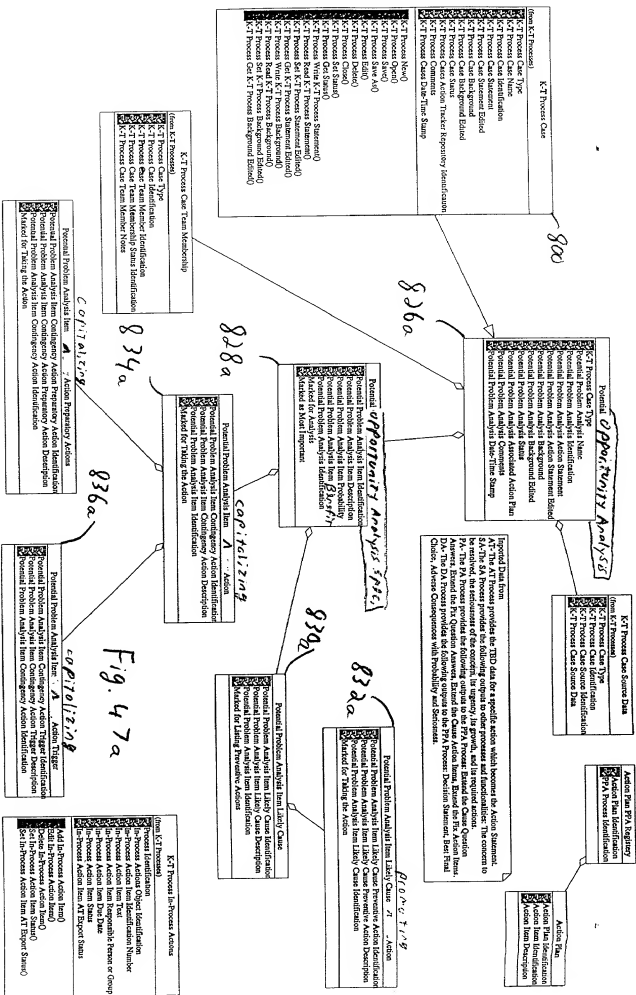
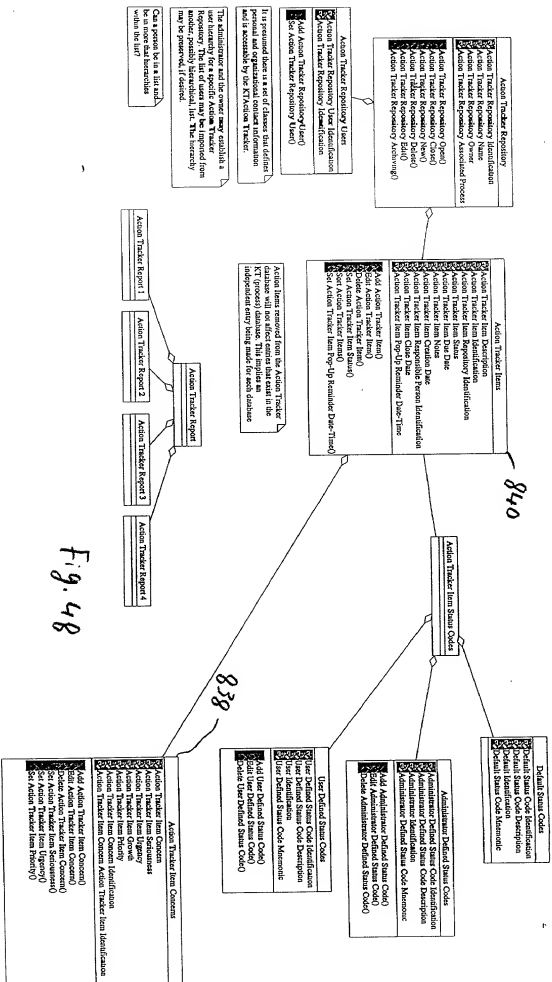


Fig. 46

09493783.012800







009493782-012600

File View Format Support Window Mode Exit

Potential Analysis

opportunity

Develop a Plan

Action Statement

Action Plan

Action Notes Who When

904 906 908

Insert Action

910 912

DLR Demos Examples Process Expert

Fig. 49

File View Format Support Window Mode Exit

Potential Analysis

opportunity

Use Potential

opportunities

Action Statement

Action Plan

Action Notes

903 914

Potential Opportunities

916

DLR Demos Examples

Insert opportunity

Fig. 50

File View Format Support Window Mode Exit

Potential Analysis

opportunity Assess Benefits

Action Statement

903

904 Action 906 Action Plan 908 Who 910 When

914

916

922 Priority	916 Potential opp.	918 Probability	920 Benefits
High, Medium, Low		High, Medium, Low	High, Medium, Low
High, Med. Low		High, Medium, Low	High, Medium, Low
High, Medium, Low		High, Medium, Low	High, Medium, Low

Import Opp.

OLR Demos Examples Process Expert

Fig. 51

File View Format Support Window Mode Exit

Potential Analysis

opportunity Consider Likely Causes

Action Statement

903

904 Action 906 Action Plan 908 Who 910 When

914

916

922 Priority	916 Potential opp.	928 Likely Cause	930 Probability
High, Medium, Low			High, Medium, Low
High, Medium, Low			High, Medium, Low
High, Medium, Low			High, Medium, Low

932

934

936

928

OLR Demos Examples Process Expert

Fig. 52

File View Format Support Window Mode Exit

Potential Analysis

Opportunity

Taking Promoting Action

Action Statement

Action Plan

	Action	Notes	Who	When
Dev				
Spec				
Net				

Priority Potential *Promoting OPP.* Actions *Promoting Action* Likely Cause

Insert Likely Cause Insert Example Action

OLR Demos Examples Process Expert

Fig. 53

File View Format Support Window Mode Exit

Potential Analysis

Opportunity

Taking Capitalizing Action

Action Statement

Action Plan

	Action	Notes	Who	When
Dev				
Spec				
Net				

Priority Potential *Capitalizing OPP: Capitalizing Action* Actions *Capitalizing Action* Likely Cause

Insert Contingent Action Insert Example

OLR Demos Examples Process Expert

939 942 940q44 Fig. 54

09493783.012800

File View Format Support Window Mode Exit

Potential Analysis

Modify Plan

Action Statement

Action Plan

Action Notes Who When

Insert Action Update Action Plan

OLR Demos Examples Process Export

946

Fig. 55

09493783-012800

ELECTRONIC TOOL 1.0

File Cell Communication View Support Window

State Possible Causes

Describe the Problem

State the Problem

Specify the Problem

Identify Possible Causes

Use Distinctions and Changes

✓ State Possible Causes

Evaluate Possible Causes

Test Possible Causes Against Specification

Determine the Most Probable Cause

Confirm True Cause

Gather Facts to Verify the True Cause

Think Beyond the Fix

Problem:

SITUATION APPRAISAL

✓ PROBLEM ANALYSIS

DECISION ANALYSIS

POTENTIAL PROBLEM ANALYSIS

POTENTIAL OPPORTUNITY ANALYSIS

ACTION TRACKER

Notepad Support 1.2 Go to Interview Mode Previous Screen Next Screen

You've chosen to conduct a Situation Appraisal. If you're concerned about a situation and are not sure what to do, this process will help you.

- Identify and prioritize specific concerns.
- Understand the actions to take to resolve them.

Before you begin the appraisal, you'll complete these steps:

1. Record the background of the situation.
2. Record the theme of the appraisal.

47/127

[None](#)[Previous Screen](#)[Next Screen](#)

Fig. 57

00403793.012800

ethink™



1 What's the background of this situation? Describe the situation and its history.

Background

Notepad

Previous Screen

Next Screen

Fig. 58

09493793.012800



2. What situation or theme in this situation appraisal? Record a brief phrase and describe this appraisal.

2

Theme or Title

Notepad

Previous Screen

Next Screen

Fig. 59

09493782.012800

You've recorded the situation background. Now, you'll identify your concerns about this situation by completing these steps:

- 1 Record your concerns
- 2 Separate and clearly label concerns in the record table
- 3 Review your concerns

1 What are your concerns about this situation? Record a brief description of each issue, treatment opportunity, your rating.

Concerns

Insert New Concern

Notepad

Previous Screen

Next Screen

Fig. 61

T

1

7

1

Next Concern:

2

1

1

3

Review you, search and builded concerns. Any concerns still unclear. Do any of the poems require more than a prediction of how we want it. (Also, in Section 1000)

Concerns

Separated and Clarified Concerns

Insert New Concern

Insert New Clarified Concern

Notepad

Previous Screen

Next Screen

Fig. 63

00403783.012800

You've identified and clarified your concerns. In the next section, you'll set priority for resolving your concerns. Is the order in which the concerns need to be resolved clear?

a Yes, and I would like to set the priority now.

c No. I need to determine the Current Impact, Future Impact, and Time Frame of each concern before I can determine the priority.

Notepad

Previous Screen

Next Screen

You've chosen to set priority now. To do that, you'll follow these steps:

1. Determine whether each component is of High, Medium, or Low priority.
2. Review your priorities.

Notepad

Previous Screen

Next Screen

Fig. 65

00403783.012800

- 1 What's the priority for each concern? Prioritize your concerns as High, Medium or Low depending on their importance and on how likely you will resolve them.

Concerns		Priority
		High <input type="checkbox"/>
		High <input type="checkbox"/>
		High <input type="checkbox"/>
		High <input type="checkbox"/>
		High <input type="checkbox"/>
		High <input type="checkbox"/>
		High <input type="checkbox"/>

USE THESE SCREENS TO

Notepad

Previous Screen

Next Screen

Fig. 66

00493783-012800

2. Review and prioritize concerns. Please indicate, in order of priority, which concerns you should monitor most closely. You should rate priority.

Concerns		Priority	
		High	<input checked="" type="checkbox"/>
		High	<input checked="" type="checkbox"/>
		High	<input checked="" type="checkbox"/>
		High	<input checked="" type="checkbox"/>
		High	<input checked="" type="checkbox"/>
		High	<input checked="" type="checkbox"/>
		High	<input checked="" type="checkbox"/>

USE NEW SPACE HERE

Notepad Previous Screen Next Screen

Fig. 67

You've prioritized your concerns. Now you'll determine what to do to resolve each concern by completing these steps:

1. Determine the process you'll use
2. Describe how you'll resolve your concerns

Notepad

Previous Screen

Next Screen

Fig. 68

00403783.012800

1. Main process should be used to resolve differences. If a process is not available, process from the list should be taken into account without any analysis. process should be used.

Concerns	Process
	Situation Appraisal <input type="checkbox"/>
	Situation Appraisal <input type="checkbox"/>
	Situation Appraisal <input type="checkbox"/>
	Situation Appraisal <input type="checkbox"/>
	Situation Appraisal <input type="checkbox"/>
	Situation Appraisal <input type="checkbox"/>

USE IN NEW SITUATION

Notepad

Previous Screen

Next Screen

Fig. 69

2a What do you need to do to resolve (concern X)? Briefly describe how you plan to resolve the concern.

Concerns	Process		Resolution	
	Situation Appraisal	<input checked="" type="checkbox"/>		
	Situation Appraisal	<input checked="" type="checkbox"/>		
	Situation Appraisal	<input checked="" type="checkbox"/>		
	Situation Appraisal	<input checked="" type="checkbox"/>		

Is this a new concern?

2b Record the resolution for another concern

Is this a new concern?

Notepad

Previous Screen

Next Screen

Fig. 70

You've determined how to resolve your concerns. Now, you'll develop a plan for resolving the concerns by completing these steps:

1. Record actions needed to resolve the concern and assign responsibility for the actions.
2. Review the plan.

Fig. 71

1a. What needs to be done to resolve this concern? Review the concern and require specific actions to be taken to resolve the concern. (500)

Concerns	Priority	Process	Resolution	Actions	When	Who	Role
	High	<input checked="" type="checkbox"/> Situation Appraisal	<input checked="" type="checkbox"/>				
	High	<input checked="" type="checkbox"/> Situation Appraisal	<input checked="" type="checkbox"/>				
	High	<input checked="" type="checkbox"/> Situation Appraisal	<input checked="" type="checkbox"/>				
	High	<input checked="" type="checkbox"/> Situation Appraisal	<input checked="" type="checkbox"/>				
	High	<input checked="" type="checkbox"/> Situation Appraisal	<input checked="" type="checkbox"/>				

Insert New Action

1b. Assign actions to address the concern

Return
Previous Screen
Next Screen

Notepad

Previous Screen

Next Screen

2 Here is your plan to helping you to write. If these points are ok for you, will your concerns be resolved? If not, revise the list.

[illegible]

Insert New Action

Notepad

Previous Screen

Next Screen

ELECTRONIC TOOL™

Cell Communication View Support Window

Use Distinctions and Changes

Problem: Flight attendants have red sweat

What object?	Is	Is Not	Distinctions	Changes
	Flight attendants	Pilots, Passengers, Ground Crew, Gate Agents, Lead Flight Attendants Both male and female Only female Only male	Demonstrate safety equipment	New life vests (early January)
What deviation?	Red sweat Perspiration with red particles	Blisters, sores Blood		
Where Geographically?	On our A300s Three 727s NY-Florida (A300) NY-Chicago (727) NY-Toronto (727)	Other carriers using A300s Our DC-9s	Our A300 interior configuration	New counter tops (early March) New cleanser (mid March) new safety equipment (early January) new life vests (early January) No known change

Insert Is/Is Not Pair

Insert Distinction

Insert Change

Notepad

Support

Go to Interview Mode

Previous Screen

Next Screen

Fig. 74

00493783-012800

04/127

ELECTRONIC TOOL™

Cell Communication View Support Window

Use Distinctions and Changes

Problem: Flight attendants have red sweat

- 1 Look at the "WhatObject" is/is not pair below. What is distinct (different odd, special or unique) about Flight attendants when compared to Pilots, Passengers

Type an answer in the Distinctions cell below.

If you find another Distinction, click the Insert Distinction button, then type the new Distinction in the new cell.

What object	Is	Is Not	Distinctions
Flight attendants		Pilots, Passengers, Ground Crew, Gate Agents, Lead Flight Attendants	Demonstrate safety equipment

Insert New Distinction

- 2 When you can think of no other Distinction for this "Is/Is Not" pair, click the Next Pair button to consider the next pair, then repeat step 1.

Pair 1 of 5
Previous Pair
Next Pair

Notepad

Support

Go to Worksheet Mode

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ELECTRONIC TOOL™

Cell Communication View Support Window

Use Distinctions and Changes

Problem: Flight attendants have red sweat

3 Here are all the Distinctions you recorded. Review your data now and make any additions or corrections.

What object?	Is	Is Not	Distinctions
	Flight attendants	Photos, Passengers, Ground Crew, Gate Agents, Lead Flight Attendants	Demonstrate safety equipment Touch lifeweats Touch oxygen masks Handle sample belts
What deviation?	Both male and female	Only female Only male	
	Red sweat	Blisters, sores Blood	
	Perpiration with red particles		
Where geographically?	On our A300s	Other carriers using A300s Our DC-9s	Our A300 interior configuration

Insert New Distinction

Notepad Support Go to Worksheet Mode Previous Screen Next Screen

Fig. 77

ELECTRONIC TOOL™

Cell Communication View Support Window

State Possible Causes

Problem: Flight attendants have red sweat

1 How could new life vests (early January)

Cause: In, around, or between

Red sweat Flight attendants

Type your answer in the Possible Cause area below. If you find more than one Possible Cause for this Change, click the Insert Cause button, then type the new Possible Cause in the new cell.

Possible Causes

Dye rubs off on flight attendants

Allergic reaction by flight attendants

Insert New Cause

2 When you can think of no other Possible Causes for this Change,

click the Next Change button to consider the next Change from those you listed previously.

Change
1 of 3

Previous Change
Next Change

Notepad Support Go to Worksheet Mode

Previous Screen Next Screen

ELECTRONIC TOOL™

Cell Communication View Support Window

Test Possible Causes Against Spec. Problem: Flight attendants have red sweat

Select a cause to test. Ink from the printed letters causing allergic reactions in some attendants.

What object?	Is	Is Not	Conditions	Assumptions or Reasons
Flight attendants			only if...	the flight attendants are the only ones touching lifevests
Both male and female			yes, because...	men and women can have allergies
Red sweat			no, because...	allergies cause rash & blisters, not sweat
Perpiration with red particles			no, because...	allergies cause rash & blisters, not sweat
On our A300s			yes, because...	only our A300s use vests with printing
Three 727s			yes, because...	only those 727s use vests with printing
NY Florida (A300)			yes, because...	only these routes use

Insert Reason or Assumption

Notepad Support Go to Interview Mode Previous Screen Next Screen

00444713-012800

Test Possible Causes Against Spec. Problem: Flight attendants have red sweat

3 Select a Cause

1 Which cause would you like to test? Select a cause to test from the list below.

Cause	Status
Ink from the canvas causing allergic reactions in some attendants	Not started
Ink from the printed letters causing allergic reactions in some attendants	In progress
Flakes of ink rubbing off on attendants' skin, mixing with perspiration	

2 In the next step, you'll test this cause against each pair of Is/Is Not statements in the spec.

The object of this step is to try to think of every reason why this statement *might not be* the cause of Flight attendants have red sweatTo do this, you'll list facts and **assumptions** about your cause that make the cause difficult or impossible to accept.

Test Cause

Select Cause

5 click Select Cause to test a different cause.

ELECTRONIC TOOL™

File Edit Communication View Support Window Help

Test Possible Causes Against Spec. v Problem: Flight attendants have red sweat

3 If Ink from the printed letters causing allergic reactions in some attendants

is the true cause of Flight attendants have red sweat

Does it explain:

Flight attendants

But not

Pilots

Passengers

Ground Crew

Conditions

- ☐ yes it does, because...
- ☐ no it does not, because...
- ☐ it does, but only if you assume...

Assumptions or Reasons

the flight attendants are the only ones touching lifevests

Insert Assumption or Reason

4 To test this cause against the next Is/Is Not pair, click Next Pair.

Pair
2 of 4
Previous Pair ▲
Next Pair ▼

5 If you've tested all the Is/Is Not pairs, or if you've rejected this cause, click Select Cause to test a different cause.

Select Cause

Notepad Support Go to Worksheet Mode

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Fig. 81

ELECTRONIC TOOL™

File Edit Cell Communication View Support Window

Action Files: Red Sweat PA

Priority	Concern	Seriousness	Urgency	Growth	Process
Medium	Confirm true cause	Low	High	Stable	PA
Low	PA on dropping revenues	Medium	Low	Increasing	PA

Sort By Priority

Action	Who	When	Notes	Status
Perform chemical analysis on cleaning fluid	J. Schlick	11-18-98	Fluid product # 144	Cause Confirmed
Check paint on all new life vests.	J. Schlick	12-15-98		Completed

Sort By When View My Actions Only

Send/Receive Action

Notepad Support

ELECTRONIC TOOL™

File Edit View Support Window Problem Panel

Use Distinctions and Changes

Problem: Flight attendants have red sweat

- 1 Look at the "What Object?" list not pair below. What is distinct (different odd, special or unique) about Flight attendants when compared to Pilots, Passengers
Type an answer in the Distinctions cell below.
If you find another Distinction, click the Insert Distinction button.

What Object?	Is	Is Not	Distinctions
Flight attendants (The full text and intent of this question is displayed within this mouse-over.)	Is	Pilots, Passengers, Ground Crew, Gate Agents, Lead Flight Attendants	Demonstrate safety equipment

Insert New Distinction

- 2 When you can think of no other Distinction for this "Is"/"Is Not" pair, click the Next Pair button to consider the next pair, then repeat step 1.

Pair 1 of 5
Previous Pair
Next Pair

Notepad Support Go to Worksheet Mode Previous Screen Next Screen

You've chosen to conduct a Problem Analysis. If you have a problem, and you don't know what's causing it, Problem Analysis will help you find the cause.

Before you begin the analysis, record the problem background by completing these steps:

- 1 Describe how the object with the problem is actually performing and how it should be performing.
- 2 Write a concise Problem Statement that explains what object has the problem and what the problem is.
- 3 Confirm that the cause of the problem is unknown.
- 4 Describe how the problem was discovered.
- 5 Record the actions to minimize the problem and any attempts to solve it.
- 6 Review the problem background.

Notepad

Previous Screen Next Screen

think



1a How is the person, process or thing with the problem actually performing?



Actual

1b How should the person, process or thing with the problem ideally be performing?



Should

Notepad

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Next Screen

Fig. 86

09493783.012800

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Refer to your **Should** and **Actual** information to answer the following questions.

Should

Actual

2a What equipment is used to produce process, or product has the problem? What does the object that has the trouble

Object

2b What is the difference between what should be happening and what is actually happening? Briefly describe the deviation the object is experiencing

Deviation:

Your **Problem Statement** describes the object and the deviation. In process, read the statement so that it can be easily understood by anyone in your organization.

Problem Statement

Notepad

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3. Do you know what's causing it?

- ☐ No, I'm not certain. Continue the PAIN
- ☐ Yes, but I need to choose a way to fix it
- ☐ Yes, but I need to make a plan for fixing it
- ☐ Yes, but I can't fix it until I find out what's causing the cause
- ☐ Yes, but I want to continue this PAIN way

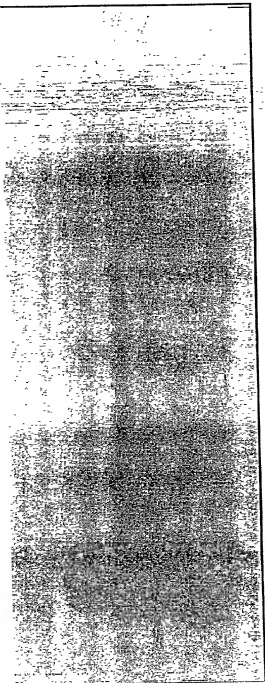
Notepad

Previous Screen | Next Screen



4. How was the problem discovered? Reasonably information you know about how the problem was discovered and who discovered it.

How was the problem discovered:



Notepad

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Next Screen

Fig. 89

00403783.012800

5a What can you do to minimize the problem? List actions that need to be taken to contain the problem. Under each action, describe it. If you've already taken action, describe those actions here. Who is responsible for completing each action? Assign a person or group to each action.

Actions to minimize the problem

Person or group responsible

Date

Insert New Action

5b What have you learned, and solve the problem? Record any actions that have identification.

Actions to solve the problem

Insert New Action

Notepad

Review Screen

Next Screen

6. Here is the information you listed as background for your problem. It may include information about the problem that you entered in another address, such as complete and accurate reproduction of the problem background. Do you want to add any information?

If so, enter the problem background here:

Actual

Should:

Do you know what's causing the problem?

How was the problem discovered?

Notepad

Previous Screen

Next Screen

In order to find the cause of the problem you'll need to describe four aspects of it: What, Where, When, and Extent. First you'll describe what the problem is by following these steps:

1. Record what specific object has the deviation.
2. Record what similar objects could have the problem, but do not.
3. Record the specific deviation.
4. Record what similar deviations the object could have, but does not.
5. Review your data, data making sure it's complete and specific.

Notepad

Previous Screen

Next Screen

What specific person, system, or thing is experiencing the deviation? In your problem statement, you describe the problem as "possible" because your description is not yet more specific and complete.



What object?

--	--

Insert News

Notepad

Previous Screen

Next Screen

Fig. 93

09493783.012800

2. What reason system defining multi-objects have, outposts and? In this notice, the objects that are similar to but are not experiencing the deviation.

What object?

Is

Is Not

Insert New SIS Not Pair

Note pad

Previous Screen

Next Screen

Fig. 94

09493783.012800

84/12

3. Where you is the deviation in your opinion statement, please identify the deviation as (possible, likely, or impossible) to make in the future and the (possible, likely, or impossible) to make in the future.

What deviation?

--	--

Notepad

Insert New...

Previous Screen | Next Screen

Fig. 95

09403783.012800

4. What are deviations and (reasons) for exceeding, but is not, limits? Normal, report conditions in table, but you might expect to see here, very large small, or measure on the object, but none.

What deviation?

Is

Is Not

Insert New/Is Not Fail

Notepad

Previous Screen

Next Screen

Fig. 96

5. Review your material. Can you make it more specific? Do you need to add more? If so, review your material now.

What object?	Is	Is Not
What deviation?		

Insert News/Is Not Pair

Note pad

Previous Screen

Next Screen

You've described what the problem is. Now, you'll describe where the problem is located by completing these steps.

1. Record the physical location where the object is always found when it has the deviation.
2. Record other physical locations where the object has been, even if it doesn't have the deviation.
3. Record where the deviation is on the object.
4. Record locations on the object where the deviation could be, but isn't now.
5. Review your whole data, making sure it's complete and specific.

Notepad

Previous Screen

Next Screen

1. Where is when it has? Record the specific physical locations where the object is located when it has the designation.

Where geographically?

is

Insert News

Notepad

Previous Screen

Next Screen

Fig. 99

00493783.012800

2. Where did the could have been located? (geographical places of identical objects have been reported have been located, or have not have been located)

Where geographically?

Is	Is Not
<input type="checkbox"/>	<input type="checkbox"/>

Notepad

Insert New Screen Pair

Previous Screen

Next Screen

Fig. 100

09493783.012400

3. Where is location of object in the piece on the object with the deviation can be seen. Smaller field head tested for structural

Where on the object?

is

Insert New Is

Note pad

Previous Screen Next Screen

Fig. 101

09493783.012800

4. Where does it go? Record places on the object where you would reasonably expect to see the elevator in this position.

Where on the object?	Is	Is Not

User News/IS Note Pad

Note Pad

Previous Screen

Next Screen

Fig. 102

92/127

09493783.012800

5. Review your Where information. Can you make your statement specific? Do you need to add any data to reverse your relation?

Where geographically?	Is	Is Not
Where on the object?		

Insert New/Is Not/Has

Notepad

Previous Screen / Next Screen

Fig. 103

You just described the location of the object. Now, describe when the problem occurred by following these steps:

- 4/12/94
1. Record when the problem was first noticed.
 2. Record the times when the problem could have been noticed first, but was not.
 3. Record the times the problem has occurred since the first time it happened.
 4. Record the first six times the problem could have happened, but did not.
 5. Record the events in the objects life cycle that were happening when the problem first occurred.
 6. Record the events in the objects life cycle that could have been happening when the problem first occurred.
 7. Review your When data.

Noepad

Previous Screen | Next Screen



1. When did you first notice it? 2. Recognize a time and date the deviation first occurred.

A large rectangular area with a dark, textured background, likely for handwritten notes or a drawing.

When first?

A horizontal line with a small vertical tick mark in the center, separating the 'When first?' label from the rest of the form.

Notepad

Insert News

Previous Screen Next Screen

Fig. 105

09493783.012800

93/127

2. What questions or afterthoughts could you have if you had a list of names? What problem could it be a good idea to have a list of names?

When first? Is Is Not



Insert New/s/ Not Edit

Notepad

Previous Screen

Next Screen

Fig. 106

00403783.012800

96/127

3a When since has the patient been in the hospital? (in days)

When since?

Is

100

97/127

3b How often does the patient have a seizure? (in days)

What pattern?

Continuously

Is

100

Next

Previous Screen

Next Screen

Fig. 107

4b When signed on, have you read built client? (Record the dates and times after when you might have expected to receive program, out of sight)

When signed?	Is	Is Not

You said the deviation is occurring in a patient. Based on this information, the system has selected the patients that could possibly have a deviation in the details. In addition, view the date

When patient?	Patients	Is Not
Continuously	<input checked="" type="checkbox"/>	

Note pad

Previous Screen Next Screen

Fig. 108

5. When was the first time a person observed... Describe the event, stage, operation, or speed in the observed... when was the first time you introduced the deviation.

When in the life cycle?

1

99/127

Notepad

Insert News

Previous Screen

Next Screen

Fig. 109

00403783.012800

6. What could have been happening to them 1 year after the event? Describe the events, stages, functions or speeds of the objects in the cycle during which you might have expected to first notice the deviation from normal.

When in the life cycle?

Is

Is Not

100/127

Notepad

Insert News

Previous Screen

Next Screen

Fig. 110

00493793.012800

7. Review your information. Can you make your data more specific? Do you want to add any data? (Is it reverse flow?)

	Is	Is Not
When first?		
When since?		
What patient?		
When in the life cycle?		

Insert New Is/Is Not Pair

Notepad

Previous Screen / Next Screen

Fig. 111

09493783.012800

You described when the problem occurred. Now, you'll describe the extent of the problem by completing these steps:

1. Record the number of objects that have the deviation.
2. Record the number of objects that do not have the deviation. You do not
3. Record the size of the deviation.
4. Record what the size of the deviation could be, but is not.
5. Record how many deviations are on a single object.
6. Record how many deviations could be on a single object, but are not.
7. Review your Expendata.

Notepad

Previous Screen

Next Screen

KT othink



1a How many have? Record the total number, the percent age, or both.

How many objects?

is

1b Is the number of objects with increasing/decreasing/staying the same? Select the number that best describes the trend.

is

What is the trend in number of objects?

Increasing

Notepad

Previous Screen

Next Screen

Fig. 113

00493783.012800

2a. What could be the number of white rats is now? Reddell then notes or percentages more of less than that could be a real number of objects with the deviation.

How many objects?

Is	Is Not
<input type="text"/>	<input type="text"/>
<input type="checkbox"/>	<input type="checkbox"/>

2b. You said the number of white deviations is. Based on this information, the system selected a number that could be a real number of objects with the deviation. Inevitably, even the data.

What is the trend in number of objects?

Is	Is Not
Including	<input checked="" type="checkbox"/>
<input type="text"/>	<input type="text"/>
<input type="checkbox"/>	<input type="checkbox"/>

Note pad

Previous Screen

Next Screen

Fig. 114

09493783.012800

3a What is the size of a single? Record the size on orange or silver.

What size?

3b Is the size of the incidence increasing or staying the same? State the one that best describes the trend.

Insert: News/1s

What is the trend in the size?

Increasing

Notepad

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Next Screen

Fig. 115

4a. What other sizes could the hat be? Rated the size of range is yes more or less than

What size?	Is	Is Not

4b. You said the size of the is. Based on this information, the system selected ranges that do not describe the change in the size of the deviation. If necessary, re-select the data.

What is the trend in the size?	Is	Is Not
Increasing	<input checked="" type="checkbox"/>	

5a: How many are ordered? Report the number of range

How many deviations?

Insert News

5b: Is the number of deviations on each object increasing, decreasing, or staying the same? Select the one that best describes the trend.

What is the trend in deviations?

Increasing

Notepad

Previous Screen

Next Screen

Fig. 117

6a What would the total number of on each, but is not? Record the number of deviations (more or less than that you could see) on each.

How many deviations?

Is

Is Not

6b You said the number of per is. Based on this information, the system selected trans that do not describe the change in the number of deviations on each object. If necessary, revise the data.

What is the trend in deviations?

Is

Increasing

Is Not

Decreasing

Back

Previous Screen

Next Screen

Fig. 118

7. Review Your Explanations Can you make your statements specific? Does any data need to be added? If so, revise them.

	Is	Is Not
When in the life cycle?		
How many objects?		
What is the trend in number of objects?		
What size?		
What is the trend in the size?		
How many deviations?		

Insert New/Is Not/Repl

Go Back Previous Screen Next Screen

Fig. 119

09493783.012800

You've described what the problems, when and where it occurred, and the extent. Now, you'll identify possible causes of your problem by completing these steps.

Identify how many of you want to identify causes using knowledge and experience of Distinctions and Changes.

If you decide to use knowledge and experience

Generate possible causes using your knowledge of the problem and experience with similar problems

Record how many deviations are on a single deviation table for faults you

If you decide to use Distinctions and Changes

Describe what is distinct about your "is" data when

Record how many deviations are on a single

Record how many deviations could be on

Review your Extend data

Review your Extend data

Review your Extend data

Next Step

Previous Screen | Next Screen

1. Which method would you like to use to identify possible causes of this problem?

1

GroupBox

☐ Use your knowledge of the problem and experience with past problems. Use this method if you have some ideas about what caused the problem.

☐ Look for distinctions in changes in the "is" and "is not" data. Use this method if you are unsure of any causes.

☐ Study a few relevant causes and try to help determine if the most likely cause.

Previous Screen

Next Screen

Fig. 122

09493783.012800

2a) What is different, odd, special, or unique about...? (Repeat as many distinctions as you can think of. If you can't think of a third, leave the cell blank.)

What deviation?	Is	Is Not	Distinctions

Insert New Distinction

Insert New Distinction

2b) List four distinctions in and/or for this Not real.

Notepad

Previous Screen

Next Screen

3a) What has changed in, or around, or about? Record each change and the date it occurred.

What deviation?	Is	Is Not	Distinctions	Changes

Insert New/Is Not/Is

Insert New Distinction

Insert New Change

3b) Look for changes in a prior distinction.

Previous Screen Next Screen

Fig. 124

4a. How would the cause of the deviation have possibly caused the deviation?
Rephrase the possible causes you can think of.

Possible Causes

Insert New Possible Cause

4b. Would the causes in a) have changed?

If you think you've identified the true cause of the problem, click the next possible causes.
Otherwise, click the next screen.

Next Screen Previous Screen

Fig. 125

6a) Have you or your institution made any change in compensation have caused any changes at the national or in possible causes you can think of.



Directions

Changes

1

Possible Causes

--

Insert New Cause

6b) If you think you have identified the true cause of the problem, click here to test possible causes. Otherwise, click Next Screen.

None

Previous Screen

Next Screen

63 How could your changes in composition have caused? Review every combination of changes. For each combination, record all the possible results you can think of.

Changes

Changes

Possible Causes

Present New Cause

6b If you think you've identified the true cause of the problem, click here to test your idea. Otherwise, click **Next Screen**.

Notepad

[Previous Screen](#)

Next Screen

Fig. 127

Q&A FOR EXPORT

7/21 How would I answer? Recall all the possible causes you can think of.

Possible Causes

Close New Possible Cause

7/21 Look for causes in another dimension.

How could your classification and categorization combination have caused it? Review every combination of offenders and record all the possible causes you can think of.

Notepad

Previous Screen

Next Screen

2. Review your possible causes. Can you think of any other possible causes? If so, add more rows. Are you any causes that you did not think of? If so, distribute them from the analysis.

	Is	Is Not
What object?		
What deviation?		
Where geographically?		
Where on the object?		
When first?		
When since?		
What patient?		

Possible Causes

☒
☐

Insert New Cause

Insert New Cause

Previous Screen

Next Screen

Fig. 130

How reliable your information and change in your information have been used? Review review confirmation of changes and record in the possible causes you get in the

What object?	Is	Is Not
What deviation?		
Where geographically?		
Where on the object?		
When first?		
When since?		
What pattern?		

Possible Causes



Insert New/Is Not

Insert New Possible Cause?

Discard Possible Cause?

Previous Screen | Next Screen

You described when the problem occurred. Now, you'll describe the extent of the problem by completing these steps.

1. List possible causes against the problem. Specification and secondary notes of assumptions.
2. Review your assumptions.
3. Identify the most probable cause.

Notepad

Previous Screen

Next Screen

Fig. 132

09403783.012800

1b. Which cause medicine you like to test? (Select one from the list)

Not tested

Previous Screen Next Screen

Fig. 133

09493783.012800

$$\overline{124} \overline{127}$$

Conditions

☒ Yes, it does, because

CONSIDERS NOT BECAUSE

Colleges don't only do assume

Explanations

Insert: New/Exp/abq:0.01

ties: the bause and the other is a

Select another cause of bias

Notebook

Previous Screen

Fig. 134

QUESTIONS

Possible Causes

Explanations

Review your assumptions. Are there any other assumptions that you should consider? If so, add more.
 Review your assumptions. Are there any other assumptions that you should consider? If so, add more.
 Review your assumptions. Are there any other assumptions that you should consider? If so, add more.

Insert New Explanation

Previous Screen Next Screen

Fig. 135

3. Match possible cause lists with the problem. Problem Specification: select the one you think is the most probable cause for the problem.

Most Probable Cause	Possible Causes	Explanations
C		
C		
C		
C		
C		

English

Previous Screen | Next Screen

Fig. 136

04493783.01P800

You identified the most probable cause of the problem. Now verify that it's the true cause of the problem by following these steps:

1. Repeat action to see if the true cause is repeated.
2. Confirm the cause has been verified. Repeat the true cause.
3. Examine the cause to see if it has additional ramifications for your system or other users.
4. Describe how you intend to fix the problem.
5. Examine the fix to find out what other impacts it may have.
6. Assign actions.

Notepad

Previous Screen

Next Screen

Fig. 137

DECLARATION AND POWER OF ATTORNEY

As a below-named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: METHOD AND APPARATUS FOR PROBLEM SOLVING, DECISION MAKING
AND STORING, ANALYZING, AND RETRIEVING ENTERPRISEWIDE KNOWLEDGE
AND CONCLUSIVE DATA

the specification of which (check one):

[X] is attached hereto. [] was filed _____ as Application No. _____
amended on _____ (if applicable).

[] was filed as PCT International Application No. _____ on _____,
and was amended under PCT Article 19 on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations §1.56(a).

I hereby claim foreign priority benefits under Title 35, USC §119(a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

<u>Prior Foreign Application(s)</u>		<u>Date Filed</u>	<u>Priority Claimed</u>	
(Number)	(Country)	(Day/Month/Year)	[] Yes	[] No
(Number)	(Country)	(Day/Month/Year)	[] Yes	[] No

I hereby claim the benefit under Title 35, USC §119(e) of any United States provisional application(s) listed below:

60/091,476 (Application Number)	July 2, 1998 (Filing Date)
60/133,746 (Application Number)	May 12, 1999 (Filing Date)
(Application Number)	(Filing Date)

Express Mail Number

EL41842519605

Attorney Docket No.: KT-001AX

I hereby claim the benefit under Title 35 USC §120 of any United States application(s) listed below and insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35 USC §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

09/347,238	July 2, 1999	Pending
(Application No.)	(Filing Date)	(Patented/pending/abandoned)
(Application No.)	(Filing Date)	(Patented/pending/abandoned)
(Application No.)	(Filing Date)	(Patented/pending/abandoned)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) to prosecute this application and transact all business connected therewith in the Patent and Trademark Office, and to file with the USRO any International Application based thereon.

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Docket No.: KT-001AX

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09/97 FORM 11

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Docket No.: KT-001AX

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Abstract

Docket No.: KT-001AX

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QUESTIONS

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Docket No.: KT-001AX

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000210.2826460

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application : James D. Schlick, et al.
Application No. :
Filed : HERewith
For : METHOD AND APPARATUS FOR PROBLEM
SOLVING, DECISION MAKING, AND STORING,
ANALYZING, AND RETRIEVING ENTERPRISEWIDE
KNOWLEDGE AND CONCLUSIVE DATA
Examiner :
Attorney's Docket : KT-001AX

Group Art Unit:

I hereby certify that this correspondence is being deposited with
the United States Postal Service as first class mail in an
envelope addressed to: Box Missing Parts, Assistant Commissioner
for Patents, Washington, D.C. 20231 on _____.

By: _____
Christopher J. Lutz
Registration No. 44,883
Attorney for Applicants

REQUEST FOR DELETION OF INVENTOR UNDER MPEP § 201.03

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Pursuant to MPEP 201.03, it is requested that the below named
individuals be deleted as inventors in the present application.
These individuals were named as inventors on the unexecuted
declaration filed in parent application No. 09/347,238, filed
July 2, 1999, entitled METHOD AND APPARATUS FOR PROBLEM SOLVING,

- 1 -

Express Mail Number

EL41842519605

Application No.:
Filed: HEREWITH
Group Art Unit:

DECISION MAKING, AND STORING, ANALYZING, AND RETRIEVING
ENTERPRISEWIDE KNOWLEDGE AND CONCLUSIVE DATA, to which the
present application claims priority.

Chris Serrano
Jen McLane
Ramon Rono
Lisa Mentz
Josh Geller
David Schapiro
Kevin Osborne
Kevin Nguyen
Catherine Lau

Respectfully submitted,

JAMES D. SCHLICK, ET AL.

By: 

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Date: 1/28/00

CJL/jds/219412
Enclosure